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ABSTRACT

Research findings from a study of collective bargaining in New York and Michigan school districts indicate that collective bargaining does have a significant impact on the allocation of resources in ways that affect student learning. These findings support hypotheses based on the theory that collective bargaining will make a difference in resource allocation when the preferences of teachers and management do not coincide. The hypotheses state that, without collective bargaining, management responds to the preferences of marginal teachers (those mobile enough to quit if dissatisfied) because inframarginal teachers (those less mobile) pose less of a threat to district stability. Moreover, inframarginal preferences are more effectively represented when teachers are unionized, and strong unions can significantly alter the outcomes of contract negotiations, affecting teacher control over instructional spending. The research examines relationships among the following factors: union affiliation, district characteristics, kinds of contract provisions, and numbers of contract provisions. Special attention is paid to the impact of enrollment decline on union intersts in collective bargaining. The study found that the stronger the union, the more items covered in the contract, the more resources allocated to instruction, and the more control exercised by teachers in district decision-making. (Author/PGD)

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The Effects of Collective Bargaining on Public Schools in Michigan and New York

by

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An Occasional Paper

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Chapter 1

THEORETICAL OVERVIEW

Collective bargaining for public school teachers has been a fact of life for twenty years, but only recently have researchers begun to consider its effects on the organization and performance of public schools. This paper represents the condensation of a year-long study conducted in 1980 to empirically test hypotheses about the impact of collective bargaining on schools and students.

Review of the Literature

The theoretical literature on public employee collective bargaining can be divided into two strains--that which explores the ideal relationship between management and labor in the public sector and that which explores the existing relationship under collective bargaining.

In looking at the ideal, Robert Summers postulates that democracy must be protected at all costs and argues that collective bargaining in the public sector diminishes democracy by delegating to a private third party, the collective bargaining committee, decisions that were previously made by an elected body, the local school board (1976). Summers argues that collective bargaining's potential to improve management-labor relations is not important enough to justify a weakening of our democratic institutions.

Other researchers, like Wellington and Winter (1971), posit that collective bargaining gives unions "disproportionate power" in the management-labor relationship. In contrast to Summers, they are not concerned that

unionization in the public sector may be antidemocratic. They focus, rather, on the effects of union power on the provision of public services. Their logic is primarily economic: unionization constrains competition in the public employee labor market. Thus, wages and benefits are set, not by the supply and demand of qualified teaching personnel, but by negotiators faced with the threat of labor unrest or service curtailment.

In the private sector, collective bargaining poses less of a hazard to efficiency because both labor and management are constrained by the marketplace. Labor's demands are tempered by the fear that increased wages may raise a firm's prices to uncompetitive levels and lead to employee layoffs. Management is reluctant to agree to higher salaries for fear of a profit reduction and possible bankruptcy. In public sector negotiations, neither management nor labor is subject to similar restraints. Management can often pass increased costs on to taxpayers and many public employees discount the threat of layoffs because public services are considered essential. Thus the researchers argue that disproportionate union power increases the cost of public services, such as education, and has the potential to reduce either the quantity or quality of services provided.

Political scientists have given attention to the same theme in examining the desirability of public sector bargaining (Mitchell 1976 and Pierce 1975). For them, the relative power of various political actors determines the distribution of the costs and benefits of public services. Most political scientists contend that the public interest is best served when access and power in the political process are broadly distributed. Unionization of public employees has increased the power of labor unions by giving them

a law-making role in decisions affecting wages and working conditions, and by creating a powerful interest group capable of influencing legislation through compaign activities and lobbying. The question is whether unions now have enough or too much power in the political process. This question leads to speculation about the kinds of institutional arrangements that produce the appropriate balance of power among competing political interests. To the extent that unions are found to have "disproportionate power," recommendations are made to reduce union power or enhance either the power of public managers or of consumers of public services (Pierce 1975).

The second strain of theoretical literature on public sector collective bargaining examines the nature of the bargaining relationship as revealed in empirical studies. The antecedents of this work are more varied and frequently evolve from an extensive body of literature that seeks to understand how collective bargaining modifies the relationship between management and labor that existed in the prebargaining period.

Empirical Literature

Empirical studies of public sector collective bargaining are limited in number. Most of the quantitative studies of teacher bargaining have attempted to examine the effect of unionization on teacher salaries and fringe benefits (Kasper 1970; Thornton 1971; Baird and Landon 1972; Hall and Carroll 1973; Lipsky and Drotning 1973; Frey 1973; Chambers 1977; and Baugh and Stone 1982). These studies generally compare increases in teacher salaries in districts that bargain collectively with those in districts that do not. Contrary to conventional public perceptions, most of the

studies support Kasper's original estimates of increases that range from 0 to 5 percent.

Chamber's findings show a consistently higher impact of bargaining on salaries, an average of 7.5 percent increase in unified districts and a 16.8 percent increase in elementary districts. The higher estimates result from his taking into account both district and regional effects of bargaining. Chambers also found that bargaining increases administrator salaries along with teacher salaries, but at a somewhat lower rate.

Baugh and Stone have found an even greater effect of unionization on wages during the period 1977-78. Using national data, the two researchers found that in 1977 unionized teachers and related teaching personnel had increased their wages, compared to those of similar nonunion workers, by 12 to 21 percent.

Another branch of empirical research departs from looking solely at wage effects and considers the effect of collective bargaining on other aspects of the employee-management relationship. Much of this work relies on the analysis of collective bargaining agreements, case studies, and the experience of the researchers. McDonnell and Pascal examined both the determinants of bargaining agreements and trends in bargaining behavior (1979). They found that state collective bargaining laws and the length of the bargaining relationship were important determinants of the bargaining agreement. Contracts reflect the concern of unions over wages and fringe benefits, working conditions and job security, and issues of educational policy, in that order of priority. With respect to trends in collective bargaining, McDonnell and Pascal concluded that unions use political pressure

as well as collective bargaining to pursue their objectives. They noted that no single impasse procedure is more effective than all others; that school board members avoid negotiations; and that principals are largely responsible for contract administration. Finally, they downplay the consequences of collective bargaining on the educational process itself.

> We found that students experience the effects of bargaining only indirectly and occasionally. They may attend somewhat smaller classes, but for fewer hours per day and fewer days per year. Rising personnel costs may result in less supplementary learning resources for students, but at the same time teachers may be happier and aides and specialists more plentiful. An older and more highly credentialed teacher force may mean more expertise in instruction, but perhaps less flexibility and energy. How any of these consequences of collective bargaining influence the rate of learning or other student interests remains largely unknown (pp. xii-xiii).

Perry (1979) examined nine school districts' decade of experience with collective bargaining and reached the following conclusions: collective bargaining in public education is not radically different in process and results from collective bargaining in the private sector; political constraints on collective bargaining are weak and diffuse; and the primary burden of disciplining negotiators has fallen to the fiscal constraints facing many school districts. Perry concludes that the primary effect of collective bargaining has been to improve the salaries and working conditions of teachers. Teachers have forced taxpayers to pay them more for their services. Working conditions have been improved by a lowering of the teacher/pupil ratio. Teachers have gained rights, in the form of protection from arbitrary treatment, and a role in educational decision-making.

A final example of research on the bargaining process is Kerchner's work on the impact of collective bargaining on school governance (1979). He concludes that collective bargaining has produced a multilateral, or at least a bilateral, system of decision-making, has brought new participants into educational decision-making, has moved the locus of decision-making to locations outside of school systems (especially to state legislatures and the courts), has broadened the scope of issues in labor relations debates, and has changed the nature of managerial work in schools.

The principal focus of empirical research on collective bargaining in education has been on bargaining's wage and process consequences. Almost nothing has been written on the effects of collective bargaining on the allocation of resources in schools and the consequences of changes in allocation on student achievement. We have attempted to fill this gap by postulating that collective bargaining can be expected to alter the allocation and use of school resources. We tested our hypothesis with data from 1,336 school districts in the states of New York and Michigan.

Description of Study

This study, The Effects of Collective Bargaining in Public Schools, analyzed the impact of collective bargaining on decisions likely to affect the educational process and, ultimately, the achievement of school children. Chapter 2 presents a theoretical argument about why collective bargaining should be considered to have a significant effect on resource allocation decisions in public education. The argument rests on the observation that

unions represent a different set of teacher preferences about wages and working conditions than is considered by management in the absence of bargaining. Without collective bargaining, management pays primary attention to the preferences of those teachers who are likely to quit if their wage and working condition demands are not met. These tend to be young, beginning teachers for whom the cost of changing jobs is not high. Unions represent the interests of the majority of teachers and thus reflect the preferences of the median teacher. Since the median teacher is older, more experienced, and likely to be tied to the job by family responsibilities, the union will represent a set of preferences that does not necessarily fit the marginal teacher, whose demands were previously considered more important by management. The distinction between younger (marginal) and older (inframarginal) teachers leads us to develop a number of testable hypotheses in the last part of chapter 2.

Chapter 3 presents our research findings, examining the impact of collective bargaining in New York and Michigan school districts. The chapter begins with a description of the states' collective bargaining laws and includes basic information about enrollment, fiscal, and educational trends in the states.

In order to establish a baseline from which to analyze the effects of collective bargaining in the two states, we begin our discussion with an analysis of how six environmental variables affect the allocation of resources among important budget categories. The independent variables are (1) total operating expenditures per pupil, (2) student enrollment, (3) student enrollment squared, (4) percent of families on welfare, (5) the dropout rate, and

(6) the percent of parents with a college education. The dependent variables are (1) instructional expenditures per pupil, (2) administrative expenditures per pupil, (3) employee benefits per pupil, (4) total of teacher salaries per pupil, (5) teacher/student ratio, (6) average salary of teachers, (7) the percentage of teachers with a master's degree, and (8) the average years of experience of teachers. The results of the regression analysis then became the basis for identifying the independent effects of unionization and specific contract items.

Three different methods were used to enter union variables into the analysis. First we entered unions as a dichotomous variable to see what effects the presence of unions has on the dependent variables mentioned above. Next we analyzed the effects of the total number of contract items on resource allocation decisions. The total number of contract items is important because it reflects not only the maturity of the bargaining relationship but also the degree to which districts are constrained from substituting other resources for the one being limited by the contract. Finally, we examined the relationships between individual contract items and the educational (resources) items.

The final chapter, chapter 4, summarizes the results of the study. In general we have found that collective bargaining significantly affects the allocation of resources in school districts in ways that are likely to have an important impact on student learning. We have uncovered connections between contract provisions and resource allocation, teacher mobility, and classroom organization. Many of the findings are significant

and follow the predictions of our theoretical model. The statement about the relationship between collective bargaining and student outcomes is qualified by the limitations of the data and of our methodology. We have made important progress in showing how collective bargaining affects public education, yet are equally aware that much more needs to be done before the subject is exhausted.

Chapter 2

A THEORY OF THE UNION'S ROLE IN EDUCATIONAL DECISION-MAKING

This study attempts to measure the impact of collective bargaining on both the allocation of resources in school districts and on the achievement of school children. First, however, we must address the fundamental question of why collective bargaining is likely to affect educational resources and student performance.

The answer to this question is simple at one level, but its implications are rather complex. Collective bargaining between management and labor will make a difference in resource allocation decisions and student achievement when teachers' preferences on such matters as salaries, fringe benefits, working conditions, and educational policy do not coincide with the preferences of the administration. Collective bargaining statutes have given teachers a powerful voice in educational decision-making; most state laws require that management and teachers reach a mutually agreed upon decision on matters related to wages and working conditions. Compromise is essential, which means that management must modify its position to accommodate the preferences of teachers. Collective bargaining, then, makes the most difference when the preferences of managers and teachers do not coincide. Bargaining under these conditions will be the focus of the following discussion.

Teacher Preferences and Educational Decision Making

Prior to collective bargaining, teachers had only one way to express their preferences concerning wages and working conditions: they could accept an offer from the school district or look for employment elsewhere. If

teachers were dissatisfied with the salary and working conditions being offered by a district, they could quit and search for other, more advantageous conditions. Collective bargaining provides an alternative to the quit-and-search option. It offers employees a forum for expressing dissatisfaction and a vehicle for changing existing conditions. Unions expand the single option of quitting to the dual option of quitting or trying to alter the working agreement. Ultimately, then, the working conditions of a bargaining agreement may differ substantially from the conditions of an agreement without collective bargaining. We hypothesize that these altered conditions in turn can affect the allocation of resources and student achievement.

In answering the question of why unions make a difference it is necessary to address the reasons for the differences in preferences between administrators and teachers. We will begin the discussion by describing the internal labor market of an organization and why organizations choose to minimize staff turnovers. Second, we show how the distinction between marginal and inframarginal teachers leads to a labor force with heterogeneous preferences. Finally, we show that the extent to which unions alter the behavior of school administrators depends on the difference in preferences between marginal and inframarginal teachers.

Internal Labor Market for Teachers

In the economist's neoclassical world of perfectly competitive markets, firms are always assured of an adequate supply of homogeneous workers if they are willing to pay the prevailing wage. Under these circumstances,

turnover is not a problem; a worker who leaves can be instantly replaced with another identical worker without loss of output and without additional costs for recruiting or training. This is obviously not the situation facing school administrators or any other employers in the real world. Uncontrollable elements influencing the acquisition of new workers and the retention of present employees makes it costly to maintain a work force. For example, management lacks information on the intentions of present employees to remain at work. At best, school managers can estimate the average propensity of workers to quit. They seldom have information on which workers in which departments from which schools might leave. The hiring process is subject to similar uncertainties. Teachers are similarly faced with imperfect information about job openings and characteristics. Search costs limit the size of the applicant pool at any one time while screening costs and the time spent recruiting and interviewing applicants further lengthens the hiring process.

School districts are faced, therefore, with four types of personnel costs: 1) costs incurred in alternating and maintaining working conditions, 2) wage costs, 3) recruiting and screening costs, and 4) training costs. The first two costs are assumed to be proportional to the number of vacancies. Training costs are incurred with each new hire.

Cost minimizing organizations, such as school districts, will seek to minimize their total labor costs by attempting to influence the turnover and hiring rates. The turnover rate is influenced by the wages and the quality of the workplace. An increase in wages will reduce the number of quits as will an increase in the quality of the working conditions. Thus, the quit rate will vary inversely with the cost of wages and working conditions.

The hiring rate is affected by three factors: wages, recruiting expenses, and the quality of working conditions. Higher wages increase the attractiveness of the district and increased expenditures on recruiting increase the number of potential applicants. The quit rate may serve as an indication of the quality of the working conditions for prospective employees.

Viscusi has determined the interrelationships among the four types of personnel costs and their effects on the turnover and hiring rates (1979). He finds investments in workplace conditions productive for two reasons. First, they decrease turnover directly, and second, they exert an indirect effect on the hiring rate through the quit rate. The appropriate level of expenditures to improve the work environment depends on the amount of other expenditures, worker productivity and preferences, and the levels of hiring and quit rates. It is conceivable that in situations where training costs and recruiting costs are low, districts will find little incentive to invest heavily in the work environment. On the other hand, districts with high training and recuiting costs will seek to reduce quits by at least increasing wages of the marginal workers and increasing investment in the working conditions. The mix of policies will depend upon the relative response of district employees to wages and working conditions. If quits are reduced more by an increase in wages than by an improvement in working conditions, then more of the personnel expenditures will be directed to wages. Furthermore, if the administration cannot identify the marginal worker, then, because of its public nature, the school district might be well advised to increase expenditures on the working environment since the working environment affects every worker.

The primary result of the discussion of internal labor markets is that employers are concerned under most situations about retaining the present work force. Circumstances can be imagined in which this may not be true, as when job specific skills are negligible (low training costs) or job tasks are very similar and an ample supply of qualified workers is readily available. In these cases, if seniority or other tenure-related criteria have increased the wages of existing workers, the firm may seek to minimize personnel costs by trading tenured, higher-paid employees for those who are less experienced.

Marginal and Inframarginal Teachers

In most cases certain job-specific tasks learned through experience and the uncertainty of the potential replacement's true productivity provide incentive for a district to seek to retain its present teaching staff. However, teachers in one district do not all quit for the same reason. Teachers differ in their preferences. They prefer various combinations of wages, working conditions, fringe benefits, and job security. Also, their decisions to quit and search for alternative employment may be unrelated to the workplace but may involve family considerations or location. Therefore, it may behoove the district to ignore the preferences of teachers who have little intention of quitting and concentrate primarily on the marginal teacher--those most likely to leave if their preferences are not met.

In order to explore the relationship between the marginal teacher (for whom an incremental change in the workplace could influence the decision to quit or stay) and the inframarginal teacher (for whom a much greater change

in working conditions would be necessary to reach a decision to leave), we will examine three basic models of market power: the monopsonist model, a wage discriminator model, and the bilateral monopoly model. The purpose of this exercise is to show the social benefits of considering not only the marginal groups when making allocation decisions but also the inframarginal groups as well.

In order to discuss the models of market power, we need to introduce the notion of both consumer and producer surplus. Teachers, as sellers of educational services, reap a surplus when they receive higher compensation than would be necessary to keep them employed in their present situations.

The school district, as a purchaser of services, reaps a surplus when it pays less to the entire teaching staff than it would if everyone received the same wage. Clearly, when teachers receive a surplus, the surplus of the district diminishes and vice versa.

Monopsonist Model

The monopsonist model is well documented in economics literature and most accurately describes public school districts in the local labor market since districts are usually the single buyer of teacher services in the area. If the school district acts as a monopsonist and at the same time attempts to minimize its costs, its wage offer will attract only marginal teachers and result in a suboptimal number of teachers employed. Maximimization of the joint surpluses of the school district and the labor supply results in an optimal allocation of labor only if the valuation of the marginal teacher is the same as the average of the marginal valuations of all teachers,

that is, if the preferences of all of the teachers regarding wages and working conditions are identical. Thus, if teachers had identical preferences, the school district, in order to retain the marginal teacher, would simultaneously meet the preferences of all teachers.

Wage Discrimination Model

Teachers' preferences differ, however. The obvious solution to districts' problems in retaining their work forces would be for teachers to individually reveal their true preferences for working conditions and wages and to reach an individual agreement with the district. However, such individual bargaining would be a disadvantage for the inframarginal teachers. It is obvious what would happen if these teachers, who for various reasons prefer to remain within the district or who are approaching retirement, are less mobile than younger teachers and thus cannot command as high a reservation wage. Thus, the wage discriminator would need to pay the teachers individually only the wages that would keep them with the school district, no more, no less. The district would reap the entire surplus and workers would receive less than they would under the monopsonist model.

However, most school districts are unable to disciminate among wages since they follow a uniform salary schedule in which wages are defined by jobs in the form of increments of experience and education and not by individuals' qualifications. A uniform salary schedule has not always been in use. At the beginning of the century (before teacher unions), teachers were paid according to merit as assessed by the principal. Through the increased voice of teacher associations and unions, this practice was gradually eliminated as teachers complained of its arbitrary and whimsical procedures.

Individual contracts between the district and teachers are not altogether unfeasible, however. Because of the uncertain events facing both sides, contingency contracts may be drawn up which, depending upon the outcomes of the events, may be more beneficial to one party than the other. If the outcome favors the teacher, then the teacher will receive a small share of the supplus that otherwise would have been claimed by the district.

Obviously, there is no incentive for teachers to reveal their true preferences since the outcome is probably a compensation package that is smaller than they otherwise would receive. Thus, even if the district could mystically divine the preferences of all the teachers, teachers would immediately be inclined to band together to claim a larger share of the total surplus.

Bilateral Monopoly Model

Teacher unions are formed to counter the power of the monopsonistic public school district. The bilateral monopoly model provides a suitable framework for examining the relationship between the school district, as the sole buyer of teacher services, and the union, as the sole seller of these same services. The objective of the union becomes clear from the discussion of the wage discrimination model. The union wishes to maximize teacher surplus (or benefits) as derived from wages, working conditions, fringe benefits, and the quantity of labor. Clearly, unions have pressed to gain concessions in these areas (Perry 1979).

The bilateral monopoly model produces a number of possible outcomes. If the union is weak, the outcome of bargaining may be equivalent to the monopsonist case, in which the school district claims almost the entire

surplus leaving just enough for the union to support claims that it benefits teachers. If the union is strong, the reverse may occur. The union may reap the entire surplus in the form of higher teacher salaries and improved working conditions, leaving few resources to be allocated at the discretion of district administrators. Both solutions are optimal in terms of the marginal worker, but neither one considers the preferences of the inframarginal worker, except under unusual circumstances. However, the element of market concentration can never raise the surplus value above that obtained if competitive outcomes were to prevail, and it will usually result in suboptimal working conditions. The cooperative solution will maximize the joint surplus of employer and employees as represented collectively. In this case, the optimal working conditions will reflect the preferences of inframarginal workers.

Union Effects on District Decisions

The distinction between the behavior of the district and the collective behavior of teachers rests with the difference between the marginal and inframarginal teachers. The district seeks to meet the preferences of the marginal teachers, and the union, through its democratic process, seeks to meet the preferences of the inframarginal teachers (who constitute a majority of the constituency). If the preferences of the two types of teachers are identical, then the decisions of the two parties will coincide. If preferences differ, then the decisions will conflict and can only be optimally resolved under a cooperative solution hammered out at the bargaining table.

The divergence of the two decision sets (administrators and teachers) determines the propensity to bargain for particular items. Once it is decided to bargain for a particular item, the appearance of the item in the

contract will be the result of either union strength or the sacrifice of some other aspect of the bargaining agreement. As union strength increases, the union is required to sacrifice less on other items.

Contract items appear in a contract because the district is not meeting the preferences of the teachers' union or as a contingency for meeting union preferences under certain conditions in the future. Both reasons for the appearance of contract items rely on the occurrence of an event. In the first case, the event has occurred and the consequences are presently being experienced. In the second case, the event has yet to occur (or maybe it has occurred before but at the moment is not present) and teachers want to protect themselves against the consequences of the event occurring in the future.

Suppose that a particular item is placed in the contract in response to the combination of forces mentioned above (i.e., heterogeneous preferences and union strength) but that over time the preferences of marginal teachers move closer to the preferences of inframarginal teachers, perhaps due to a common concern about external conditions. If the district still bases its decisions on the preferences of marginal teachers, then the observed union influence will not be as signficant as it was at the time the contract was negotiated. If the district prefers an action that does not benefit any group of teachers (laying off teachers), then the coalition of all teachers may have a significant impact. However, in the face of financial exigency, the union may work harder to protect tenured teachers than nontenured teachers. Thus, the impact of the contract item on resource allocation will be a function of the occurrence of an event and the distribution of preferences of teachers.

The reason that union strength is not considered a factor is that the presence of a contract item presupposes that the union has sufficient bargaining strength to implement it. Enforcement of the item is another matter, but we will assume that enforcement is not a major issue. In this framework of contingency contracts, it is possible that a contract item has no impact and may not have an impact until the event takes place. On the other hand, if the item is not a contingency item, and the item is responding to a current event, then in order for the article to be placed in the contract, there must exist a point of conflict on the related outcomes of the decision.

If we are correct in assuming that the district in the absence of a contract meets the preferences of marginal teachers and that there are substantial differences among teachers, then there exists the potential for a large degree of dissension within the teacher organization. The solidarity of the union will depend on the conditions under which teachers may feel marginal, that is, the conditions under which teachers feel that they may be able to find alternative employment which offers higher benefits than their current positions. Some obvious possibilities come to mind. In times of increasing enrollment and budget support, teachers may be optmistic about job prospects and will be more likely to move in response to poor working conditions. School districts, in trying to retain a qualified teaching staff, may be more likely (and capable) of meeting the marginal teachers' preferences. In these cases, unions will be less likely to rally the teachers around the preferences of the inframarginal teachers. At the same time, the inframarginal teachers may decrease in numbers and may need a wider political coalition in which to voice their preferences within the teacher organization.

In times of declining enrollments and decreased school expenditures (in real terms), the opposite situation may occur: teachers may be less optimistic about alternative employment in other schools, districts may be able to exert less effort to retain the teaching staff, and the number of inframarginal teachers will probably increase. Although districts may be less able to meet the demands of the teachers, the collective voice will be much greater.

We have shown that it is important to include in the analysis the occurrence of specific events to demonstrate the circumstances in which contracts may or may not make a difference. It can also be shown that the distribution of teachers within the district may not neeed to be included explicitly in the analysis. If we include a variable to measure the presence of an event such as declining enrollments, then a statistically significant coefficient on the contract item will indicate that sufficient differences exist between the preferences of administrators and teachers in order for the contract item to influence the allocation of resources. Leaving out a measure of teacher preferences, however, will not allow us to determine the reason behind the difference in decision sets. We have hypothesized that the difference is a result of the heterogeneity of teacher preferences and the desire of administrators to satisfy the marginal teachers. We may, however, find that under conditions such as declining enrollments, administrators would encourage departure of teachers and would not feel inclined to retain marginal teachers by improving their compensation or working conditions. On the other hand, teachers who are dissatisfied with the poor compensation package would have little recourse but to rely on the

union to change the situation since job alternatives within the profession would be very scarce. In this situation, almost every teacher can be classified as inframarginal and the impact of the contract item on the allocation of resources would not depend upon the heterogeneity of teacher preferences.

To summarize, the presence of certain clauses in contracts is a result of the difference in preferences between school administrators and teachers and the occurrence of certain events that affect both parties. We have argued that although both factors are important in measuring the impact of collective bargaining on educational decisions, the consequences of both can be reduced to the consequences of the event. This follows from the fact that events not only affect the preferences of administrators and teachers but also affect the preferences of different groups of teachers.

Testable Hypotheses

The impact of contract items on the allocation of educational resources will depend upon two factors--the occurrence of a specific event that causes teachers and administrators to have different opinions about resource allocation decisions and the heterogeneity of teacher preferences.

The significance of declining enrollments over the past five years needs little comment. Administrators, who ten years earlier were complaining of a shortage of teachers are now faced with too many tenured teachers, too many schools, and too few students. Recognizing this problem, teacher associations have aggressively tried to bargain for job security provisions and to establish orderly procedures for laying off and recalling teachers. Administrators who are faced with these reduction-in-force (RIF) constraints are forced to cut other educational resources. For example, we would expect

that districts experiencing declining enrollments would also be experiencing budget problems since many state aid formulas are based on student enrollment. When state aid declines the community is often reluctant to appropriate additional school funds.

Faced with these constraints, administrators have a limited number of options. First, vacant teacher positions can remain unfilled, or they can be filled with part-time teachers and teachers aides. Second, salary increases may be deferred to future years by offering greater retirement or other benefits as compensation. Third, the nonprofessional staff may be cut (although such layoff may also be governed by RIF provisions if the classified staff is unionized). Fourth, working conditions may be allowed to deteriorate with fewer preparation periods, larger class size, no in-service, and fewer supplies and materials. Working conditions that are protected by contract provisions would probably not be affected unless some of the provisions were relaxed during a period of exigency.

The composition of the instructional staff also changes if enrollments continue to decline. With a reduction in hirings, the median age and experience of the group increases and the distribution becomes skewed to the right. This situation is further intensified by the layoff of young, untenured teachers.

The effect of declining enrollments on the average amount of education among teachers is not as apparent. During this period, districts probably do not want to hire highly educated teachers since they command a much higher entry pay. Furthermore, in order to minimize personnel costs, districts do not encourage continuing education by providing study leaves or tuition, and they may bargain aggressively against significant salary steps

to reward educational growth. Teachers, on the other hand, recognize that the only means of receiving pay increases is to move through the salary schedule by receiving additional education.

The changes in the composition of the teaching staff are reflected in the quality of education. Studies show that experience and education of teachers are positively correlated with student achievement. Reductions in particular teacher characteristics may reduce educational quality. On the other hand, unions may provide a stabilizing influence during hard times. By establishing orderly layoff and recall procedures, unions may give teachers a boost in morale in an otherwise dismal situation. If enthusiasm and commitment can be maintained, then the quality of education may not suffer as much as it would otherwise. Thus, we may find that certain contract items representing grievance procedures, reduction in staff procedures, and working conditions may have a positive effect on the quality of education.

Chapter 3

COLLECTIVE BARGAINING IN NEW YORK AND MICHIGAN

The states of New York and Michigan were chosen for this study because they contain public school districts which exhibit a broad range of characteristics while operating under a common state legal structure within their respective states. More importantly from a researchers perspective, the two states have collected the data necessary for an extensive analysis of this type. Because of the similarities between the two states, the analysis of the Michigan data served as a test of whether the results of the New York analysis could be replicated elsewhere.

New York was one of the first states to enact a collective bargaining law permitting teachers to be represented by unions. Governor Rockerfeller signed the State Public Employees Fair Employment Act (the Taylor Law) into law on April 21, 1962. The law gave bargaining rights to representative units of all public employees and created impasse procedures intended to prevent strikes. It also prohibited public employee strikes. A distinctive feature of the New York collective bargaining law is the broad scope of bargaining required or permitted. In a 1977 study examining the scope of bargaining in 14 selected states, New York clearly had the highest number of demands considered, whether mandatory or permissive.

While the Taylor Law is broad and vague in defining the scope of bargaining, subsequent decisions by the Public Employee Relations Board and the courts have significantly clarified the issue. Because of New York's long experience with public sector collective bargaining and the long list of negotiable items, it is an excellent state for examining the impact of collective bargaining on resource allocation decisions and, ultimately, on the effectiveness of public schools.

Michigan's collective bargaining law and traditions are similar to those in New York. The Michigan Public Employee Relations Act was signed into law on July 23, 1965, as an amendment to the 1947 Hutchinson Act. The earlier act gave public employees the right to organize and bargain collectively, but lacked the administrative machinery necessary for implementation. It also prohibited public employee strikes. The 1965 law provided the necessary administrative apparatus and did not specify any penalties for public employee strikes.

The public school teachers of Michigan have been particularly successful in establishing a broad scope of bargaining. The 1977 study of scope of teacher bargaining in 14 states (mentioned above) showed Michigan to have the third highest number of mandatory bargaining issues.

One difference between the two states lies in union affiliation. New York is dominated by the American Federation of Teachers (AFT)--of 736 public school districts, 84 are affiliated with the National Education Association (NEA), 54 are nonaffiliated, and 598 are affiliated with AFT. By contrast, 508 of approximately 600 school districts in Michigan are affilated with NEA, 16 are represented by independent bargaining units, and 24 are associated with AFT.

Data Collection

In order to conduct this examination, we collected two kinds of data. The first was on the school districts in the two states and the second was on collective bargaining ontracts. The school district data for New York were obtained from the New York State Department of Education. They included

district level financial data, student achievement scores, student characteristics, teacher salaries and benefits, teacher characteristics, and school program data. The data were complete for all school districts for the 1976-77 and 1977-78 school years and appeared to be highly accurate. The Michigan data were supplied by the Michigan State Department of Education and the Michigan Education Association. Some incomplete data, however, prevented us from accomplishing as complete an analysis as that performed on New York. Despite these shortcomings, the analysis of Michigan public school districts provided an interesting means of replicating the findings of the New York analysis and of comparing the impact of collective bargaining on the two states.

The second kind of data employed in the analysis covers the specific provisions in collective bargaining agreements for the 1977-78 school years. Two sources of information about individual district contracts are available for public schools in New York State. The first source in an analysis done by the New York State United Teachers (NYSUT), an affiliate of the AFT. NYSUT has analyzed 455 contracts from the 549 public school districts with grades K through 12. The second source is an analysis by the NEA of all 736 New York public school districts. Both sources obtained their information by examining contracts from each district and categorizing the contents into a number of items. The NYSUT data contained yes-no responses to a list of 86 items. If a contract contained a provision, such as a reduction-in-force clause or class-size limitation, then a yes response was recorded. The absence of such a provision in the contract was recorded with a no.

The NEA analysis was conducted in a similar manner. Both analyses contained information on contracts of bargaining units which were not affiliated

with the respective organizations. The NEA data contained contracts of AFT-affiliated bargaining units, NEA-affiliated units, independent units, and contracts of districts which do not have formal bargaining representatives. The NYSUT data also contained contracts of districts not affiliated with AFT with roughly the same percentage of districts included of each type.

Both sources of contract information were suitable for the purposes of this study. However, we felt that only one source should be used since different recording techniques and classification errors might result in certain biases. We selected the NYSUT data over the NEA data for a number of reasons. First, the NYSUT data provided a more detailed analysis of contracts than did the NEA data. Second, the NYSUT analysis was more easily transferrable to machine-readable form. Third, since an overwhelming number of districts were affiliated with AFT, the in-house contract analysis seemed more accurate. Finally, a random check of the NYSUT data with the NEA data revealed very little discrepancy between items which were contained in both analyses.

The New York City School District was excluded from our analyses of the impact of collective bargaining in New York State. The district is so large relative to other districts and has so many special financial arrangements, that its behavior is different from other districts. Its inclusion would have distorted our findings.

Since NEA-affiliated districts predominate in Michigan, we concentrated the analysis on those districts. The only problem with this approach was that the Detroit school district is represented by an AFT affiliate. However, Detroit was excluded from the analysis for reasons other than its

union affiliation. Since Detroit, like New York City, is so much larger than the other districts in the state, it is unreasonable to assume that it behaves the same as the other districts.

Information on Michigan school districts came from two sources. Data related to district finances, student characteristics, test scores, and teacher characteristics came from information collected by the Michigan Department of Education. Information related to contract items came from the Michigan Education Association (an NEA affiliate). Each of the 508 contracts of NEA-affiliated districts were analyzed by recording the presence or absence of various contract provisions. Since most of the districts in the state are affiliated with NEA, we foresaw little problem with including only NEA districts in the analysis when analyzing the impact of individual contract items.

District Characteristics

In the analysis of collective bargaining in New York and Michigan we first examined variations in financial and teacher characteristics among districts affiliated with the NEA, AFT, or an independent bargaining unit. To establish a baseline for analyzing union impact on public schools, we next looked at the nonunion determinants of school district expenditures. Third, we explored the effects of unionization itself on resource allocation. This was followed by an analysis of how the number of contract items affects resource allocation. Fifth, we examined whether the number of contract items affects the level of spending for public education in a community. We continued the process of disaggregating contracts by looking

at the effects of individual groups of contract items on resource allocation patterns in New York school districts. Sixth, we asked whether collective bargaining might be more or less effective in districts with declining enrollments. The question of how collective bargaining affects the quit rate for teachers was considered next. Finally, we explored the relationship between collective bargaining and teacher effectiveness.

New York. Table 1 lists the means of various financial categories and teacher attributes for AFT-affiliated districts, NEA-affiliated districts, and independent and nonaffiliated districts in New York. The figures revealed that AFT-affiliateddistricts had the largest student enrollment and NEA-affiliated districts had the smallest. Part of the difference in enrollments may be explained by the location of the districts represented by the respective bargaining units. AFT districts are much more urbanized than NEA districts. Moreover, a larger percentage of AFT districts have experienced increasing enrollments since 1972. We also found a substantial variation between district types in total operating budget expenditures per pupil. AFT districts outspent NEA and nonbargaining districts by as much as $182 per pupil. The distribution of the budget did not differ significantly among the various financial categories. All districts spent the same proportion of the budget for instructional purposes and employee benefits. A slight variation did exist for administration and salary expenditures. NEA districts allocated a slightly lower percentage of the budget to these two categories than the other two district types.

Teacher attributes remained fairly constant across districts. AFT districts claimed a slight edge in the percentage of members with master's degrees. AFT districts also had a substantial advantage in average teacher

Table 1

Mean Values of New York District Characteristics

By Union Affiliation 1976-77

District Characteristics	AFT	NEA	Independent Non-Affiliated
Enrollment	3,603	2,508	2,918
Experience/Pupil	2,207	2,025	2,073
Teachers	180	128	141
Teachers/1,000 Students	51	52	50
Average Salary	15,337	13,869	14,993
Average Experience	12	12	13
% Masters	70	64	69
Inst. Exp./Pupil	1,210	1,121	1,130
Adm. Exp./Pupil	69	47	59
Benefits/Pupil	332	301	314
Salaries/Pupil	741	674	690
% Urban	47	31	39
% Incr. Enrollment	21	13	19
% Traditional	94	97	97
% Cluster	09	09	09
% Open	13	08	12
Benefits/Teacher	7,265	6,769	7,057
% Instr. Expense	55	55	55
% Adm. Expense	03	02	03
% Salary/Inst. Expense	61	60	61
% Benefits	15	15	15

salaries. NEA districts, somewhat surprisingly, fell behind the independent and nonaffiliated districts.

Table 2 shows a comparison of the percentage of districts with selected items by district type. The most striking aspect of the table is that the frequencies did not vary much, regardless of the affiliation of the district. Contracts were negotiated for an average of a little over two years for all categories. Very few districts automatically based salary increases on CPI statistics. Binding abritration was almost universally used in negotiation deadlocks. There were, however, some unexpected trends revealed in the comparison of bargaining districts and nonaffiliated districts. A smaller proportion of nonaffiliated units had class-size provisions in their contracts while a larger percentage had provisions for educational policy committees. Another striking difference occurred in the labor jurisprudence categories. Although the same percentage of districts had staff reduction procedures, seniority clauses and recall provisions occurred in a higher percentage of nonaffiliated and independent districts than those affiliated with the national organizations.

The characteristics of the Michigan school districts are displayed in Table 3. Districts were smaller on the average than in New York and spent less per pupil than New York districts. The lower expenditures were reflected in lower average teacher salaries and larger average class size. We also found that a smaller percentage of teachers in Michigan had master's degrees and the average years of experience was also lower when compared with teachers in New York.

Table 2

Percentages of New York School Districts with Selected Contract Items by Union Affiliation 1976-77

	Contract Items	Union Affiliation AFT	NEA	Independent Non-Affiliated
1	Length of Contract (in years)	2.25	2.10	2.13
3	C.P.I. Used for Salary	9	13	10
9	Binding Arbitration	85	90	85
11	BD of ED Contract	14	7	15
20	Inservice Provision	44	25	38
31	Agency Fees	5	2	3
40	Class Size Provision	57	55	48
44	Ed Committee Ed Policy	39	38	45
46	Performance Contract	12	13	15
47	Hire Certified Personnel	18	18	20
54	Staff Reduction Procedure	39	40	40
56	No Reduction	4	0	8
57	Seniority Clause	20	15	23
58	Recall to Position	12	12	18
61	Dismissal for Cause	39	40	43
62	Severance Pay	3	0	3
65	Personal Days	95	98	98
82	Health Insurance	97	97	90
84	Life Insurance	27	12	13

Table 3

Characteristics of Michigan School Districts Means, 1976-77

District Characteristics	All Districts	Union	Nonunion
Enrollment	2,879	3,012	1,196
Operating Expense per pupil	1,071.52	1,074.08	1,038.94
Instructional Expense per Pupil	730.33	737.30	686.36
Employee Benefits per Pupil	9.99	9.93	11.15
Salaries per Pupil	525.89	530.60	497.00
Other Expense per Pupil	352.06	351.43	370.55
Average Salary	11,932.00	12,100.00	10,792.00
Percentage of Teachers w/Masters	25.22	25.84	21.02
Average Years Experience	8.32	8.54	6.72
Number of Teachers	121	127	54
Teacher Student Ratio	.0445	.044	.047
Dropout Rate	6.1	6.4	5.57
Percent Minority Students	6.17	7.54	6.62
Percent Parents College Educated	20.1	20.3	16.57
Percent Urbanized	35.2	36.0	21.48
Family Size	2.53	2.53	2.54
Percent Families with Children	58.8	58.8	58.26
Percent Change in Enrollment	-8.1	-8.2	-7.88
Percent Change in Instructional Expense	26.39	26.3	27.48
Percent Change in Masters	12.83	13.3	6.2
Percent Change in Experience	1.55	2.4	-8.5
Percent Change in Teachers	-5.36	-5.2	-7.4
Percent Change in Teacher Student Ratio	3.80	4.0	1.2
Percent Change in Average Salary	11.85	12.0	10.57
Percent Change in Total Salaries	15.65	16.0	11.8

Although most districts in Michigan had bargaining units, it was instructive to examine the differences in characteristics between the union and nonunion districts. Table 3 shows that union districts had larger enrollments by about three-to-one, while the total operating expense per pupil was roughly comparable, differing by less than $40 per pupil. Nonunion districts spent a slightly smaller percentage of their total budgets on instruction. Salaries were lower in nonunion districts, which could partially be the result of a large proportion of teachers with less education and experience. Lower salaries may also be attributed to the fact that 83 percent of the nonunion districts are in rural communities while only 60 percent of the union districts are in rural. Conversely a much smaller percentage of nonunion than union districts are found in cities and suburbs.

Another interesting comparison is the change in district characteristics over the past several years. We have computed the percentage change for a number of variables between the 1972-73 and 1976-77 school years. Enrollment has fallen for both union and nonunion districts by roughly the same rate of 8 percent over the five-year period. The number of teachers has fallen at a slightly slower rate with nonunion districts losing a slightly higher percentage than union districts. It is interesting, however, that the rate of reduction in teachers has kept pace with the decrease in enrollment, which has resulted in an increase in the teacher/student ratio since 1972. During this time, union districts were able to keep a larger staff in relation to enrollment than nonunion districts. This has resulted in an increase in the teacher/student ratio of almost 3 percent more in union than nonunion districts.

An interesting phenomenon emerged with regard to the turnover in teachers. We found that although nonunion districts were experiencing a 7.4 percent decrease in the number of teachers, the average years of experience had decreased by 8.5 percent. Union districts, on the other hand, faced a 5 percent decrease in teachers but a 2.4 percent increase in experience level. It appears that union districts were retaining more senior teachers by not hiring as many junior teachers while nonunion districts were releasing more experienced teachers and replacing them with others who were less experienced and less costly.

The difference in changes in education levels of teachers substantiates the notion that union districts retain more senior faculty than nonunion districts. Analysis reported later in this chapter addresses this problem in more detail.

Nonunion Determinants of School District Expenditures

Several factors contribute to school administrators' perceptions of quality and, consequently, to the allocation of educational resources. The first factor is the composition and size of the student body. Districts with a relatively large percentage of students from low-income families or students having little motivation (as evidenced in a high dropout rate) may require different educational services than districts with more affluent and motivated students. Another factor is the attributes and preferences of the community. Districts with a larger-than-average porportion of parents who have attended college and thus place a relatively high value on education will place greater emphasis on instructional expenditures.

New York. Since education is primarily the interaction between teacher and student, the classroom teacher is the primary educational input. The effectiveness of the teacher is determined in part by the allocation of funds to various school budgets. We divided the total school budget among a number of categories. In New York, eight components of educational resources were considered--1) instructional expenditures per pupil; 2) administrative expenditures per pupil; 3) employee benefits per pupil; 4) total teachers' salaries per pupil; 5) teacher/student ratio; 6) average salary of teachers; 7) the percentage of teachers with master's degrees, and 8) the average years experience of teachers.

We found that on the average, $2,182 was spent per pupil across the state. Of this, $1,194 per pupil went to instructional expenses, $65 to administrative services, $325 to employee benefits and the rest to items such as special education, transportation, and building maintenance. Within the instructional expenditures per pupil category, $728 of the $1,194 was allocated to teacher salaries. The average teacher salary was $14,833 and the average class size, 19.50 or 51 teachers per 1,000 pupils. Teachers had an average of 12 years of experience and roughly 68 percent of the teachers had master's degrees.

Since we were concerned primarily with how the total budget was allocated to the various resources, we examined how a dollar increase in total budget per pupil was distributed by an average district. Of the dollar incrase, $.48 was allocated for instructional purposes, $.03 for administrative purposes, $.13 for employee benefits, and the remaining $.36 for "other" purposes. Of the $.48 that went for instructional expenses, roughly 60 percent or $.29 was spent on salaries and $.19 on textbooks and materials.

Furthermore, it appeared that very little of the $.29 allocated to salaries was used to increase the teacher/student ratio and most went to increase the average salaries of teachers. We found that all financial categories increased with an increase in the total operating budget per pupil. Instructional expenditures and support services had the same elasticity whereas the elasticity on salaries was substantially smaller. We also found that an increase in enrollment increases all categories except support services, which may indicate that larger districts achieve economies of scale in providing administrative and pupil services. On the other hand, we found that districts with larger-than-average enrollments had smaller teacher/student ratios. Larger-than-average districts also paid higher average salaries. Since the magnitudes of the coefficients on average salary and teacher/student ratio were roughly the same, we concluded that the two offset each other. This conclusion was substantiated by the insignificant effect of enrollments on total salaries per pupil. Student characteristics appeared to have very little effect on resource allocation except that districts with a higher-than-average percentage of minority students spent less on total salaries, primarily due to lower teacher/student ratios. Also, these districts had a lower percentage of teachers with master's degrees.

Districts that have a higher regard for eduction, as reflected in a higher-than-average percentage of parents with a college education, tend to spend more on instruction, less on support services, and hire a larger percentage of teachers with master's degrees. We anticipated these three results.

Michigan. Educational resources in Michigan school districts were divided into categories similar to those used in New York. The financial data for each district was obtained from the Annual School District Financial Reported collected by the Michigan Department of Education. Expenditures were divided into 1) total instruction, and 2) supporting and community services. The first category included the total salaries of the instructional staff and expenditures of employee benefits. The second category included expenditures on counseling and guidance services, pupil transportation, and general administrative activities. In order to examine the effect of collective bargaining on the composition and compensation of the instructional staff, we divided total expenditures on salaries into the teacher/student ratio, average salary, the precentage of teachers with master's degrees, and average years of experience.

The financial categories and educational inputs for Michigan school districts were regressed against the same set of explanatory variables as the New York districts.

As in the New York analysis we examined the distribution of a dollar increase in total budget. For every one dollar increase in total funds, $0.61 went to instruction and $0.31 to support services. One-half of the $0.61 for instruction went to teacher salaries and the rest went to employee benefits and miscellaneous.

Collective Bargaining and Resource Allocation

New York. When examining the mean characteristics of school districts in New York, we found a substantial difference in the level of spending between districts that bargain and those that are not formally represented and between NEA-affiliated and non-NEA-affiliated districts.

We tested whether the allocation of resources between these district types differed significantly. In order to test for the difference, variables reflecting the affiliation of the district and the bargaining status were entered into demand equations. The variables were entered as interactive terms with the budget variable so that the difference in the internal allocation of funds could be recorded. The most significant difference was that NEA-affiliated districts have significantly higher teacher/student ratios than non-NEA-affiliated districts.

The ability of NEA districts to maintain larger staffs in relation to enrollments was possible partly because of the slightly lower percentage of teachers with master's degrees. Also, NEA-affiliated districts appeared to put less emphasis on administrative activities.

The difference in resource allocation is less pronounced between districts that are represented by a formal bargaining unit (be it NEA-affiliated, AFT-affiliated, or independent) and those that are not. The major difference was in the average salary. The results showed that salaries in nonbargaining districts were more sensitive to budget increases than those in bargaining districts. This result is curious since most studies have found that formal bargaining increases teacher salaries. A study by Lipsky and Drotning (1973) finds that in 1970, bargaining units in New York increased salaries by as much as 15 percent over districts that were not represented.

The difference in results may be partially explained by the increase in collective bargaining over the last decade. Lipsky and Drotning have reported that in 1970, 63 percent of the districts in New York had some type of formal collective bargaining unit. In 1977-78, the NEA tabulations showed that over 94 percent of the district was represented.

Furthermore, a substantial number of the nonbargaining districts were in heavily populated counties. Therefore, we could have been observing a spillover effect in which administrators in nonbargaining districts attempted to match the salary increase of bargaining districts within their immediate vicinity in order to discourage the introduction of full-scale collective bargaining into the district. Chambers (1977) and Ehrenberg and Goldstein (1975) have shown that the regional, or geographic spillover, effect of unionization is quite widespread. In fact, Chambers found that the regional effect accounted for most of the difference in salaries between unionized and nonunionized public school districts in California.

For whatever reasons, nonbargaining districts had higher average salaries. We found that these districts were trading higher salaries for smaller teaching staffs since the teacher/student ratio was observed to be falling. The increase in average salaries appeared to be completely offset by a reduction in teachers, since total salaries per pupil were unaffected by the nonbargaining variable.

Despite the fact that nonbargaining districts had a lower teacher/student ratio and higher average salaries than other districts, and despite the fact that NEA districts had a higher teacher/student ratio, a lower percentage of teachers with master's degrees, and slightly fewer dollars spent for administration, the differences among these three types of districts were very slight.

Michigan. The first step in analyzing the impact of collective bargaining on resource allocation in Michigan public schools was to examine the differential behavior of districts that were represented by formal

bargaining units, including not only units affiliated with the Michigan Education Association (MEA) but also districts that were represented by the Michigan Federation of Teachers and independent units. The second step was to consider the difference in behavior of MEA-affiliated districts and all other districts. Since only contracts of MEA-affiliated districts were analyzed, the distinction between the aggregate behavior of MEA-affiliated districts and non-MEA-districts provided an interesting preview of the impact of individual contract items. The third step replaced the aggregate distinction between MEA and non-MEA districts with a measure of the presence of various contract items. This step allowed us to see which contract items were responsible for the behavior shown in the previous step.

Even though Michigan was dominated by unionized school districts, which may have led to extensive spillover effects, some interesting distinctions concerning the effects of bargaining on resource allocation in unionized and nonunionized districts emerged from the analysis. We found that unionization has no significant effect on the allocation of resources to instruction, support services, or salaries. Unionization did, however, raise the average salary of teachers while at the same time lowering the teacher/student ratio, though only slightly. The net result left total expenditures on salaries unaffected.

The impact of collective bargaining in increasing enrollment districts was considerably different. Districts that were unionized spent $0.05 less per pupil on total salaries than nonunion districts. This was primarily the result of a reduction in both teacher/student ratio and average salary for unionized districts. Therefore, unions appeared to be more beneficial to teachers in declining enrollment districts than in increasing enrollment districts.

The estimates of the impact of unionization on resource allocation should be viewed with some caution since the possibility of spillover effects may have cased a bias. Since only a handful of districts were not formally represented by a bargaining unit, the distinction between unionized and nonunionized districts became increasingly obscure. The important distinction lies in the scope and content of the individual contracts. The examination of the impact of individual contract items on resource allocation constituted the major emphasis of the analysis.

Since records of individual contract items came from MEA districts only, we looked at the impact of MEA contracts as a whole on the allocation of resources before examining the effects of individual contract items. We found that MEA contracts had no significant effect on the allocation of funds to instruction in either increasing or decreasing enrollment districts. However, we did find a significant impact on total salary expenditures in decreasing enrollment districts. MEA districts allocated fewer funds to salaries and slightly more to materials and supplies. The lower expenditure on total salaries was explained by the lower average salaries paid to teachers in MEA districts. The lower salaries were partially offset by a higher teacher/student ratio. However, the tradeoff was not complete since the decrease in expenditures on salaries was over twice the increase in the teacher/student ratio. The net result was a reduction in expenditures on total salaries.

Number of Contract Items and Resource Allocation

Contract items place constraints upon the decisions of school administrators. Some contract items specify upper and lower limits on the amount of resources employed. Class-size-limitation provisions and teacher aide provisions are good examples of resource specific items. A second type of contract item is one that

establishes the procedure by which certain resources are allocated. Reduction-in-force provisions are examples of this type of constraint. These provisions establish procedures and criteria, usually based on seniority, by which teachers are laid off.

Administrators can avoid the full impact of the constraints by substituting one resource for another. For example, administrators may attempt to reduce costs but still comply with the class-size limitation provision by employing teacher aides in place of certified teachers. If a teacher aide provision is in the contract which limits the duties of the aide to nonprofessional activities or even the number of aides, then the administrator does not have the available option of substituting aides for teachers in order to attempt to reduce costs. As the number of constraints facing administrators increases, the level of administrative discretion decreases. The number of contract items in the contract is a relatively good proxy for the level of constraints placed on the administration. The number of constraints also provides a measure of the preferences of the collective bargaining unit.

Contracts are the result of negotiations that embody the preferences of both parties. The extent to which the contract reflects the preferences of one group over the other depends upon the relative bargaining strength of each. Many of the individual provisions are placed in the contract at the request of the teacher representatives in order to insure that the administration complies with the preferences of the majority of teachers. Generally, administrators have felt that the best contract is the shortest one. Although it is impossible from looking only at the number of contract items to tell whether the provision actually satisfies the preferences of the teachers, it is reasonable to assume that the greater the number of contract items, the

more the teacher preferences are satisfied. Furthermore, districts with more contract provisions have probably bargained longer than districts with fewer provisions and over time teachers have been able to carve out provisions to protect their interests.

If contract items constrain administrators to comply with the desires of teacher collective bargaining units, then we would expect resources to be allocated to benefit teachers. For instance, we would expect districts with a greater-than-average number of contract items to allocate more resources to instructional expenses since such expenses include teacher salaries. An increase in instructional costs also affects the working conditions of teachers by providing a higher teacher/student ratio and more materials and supplies for instruction. Teachers may also prefer higher expenditures on employee benefits at the expense of administrative expenses, maintenance, transportation, and certain special services.

New York. The number of contract items contained in each district contract in New York was calculated by adding up the "yes" responses to the list of items in the NYSUT analysis. Therefore, if we found that the contract in district A contained a provision to limit class size, to establish an educational policy committee, and to provide personal days, but was silent on all other items, then the contract would be given a score of three. The number of items was normally distributed with a minimum of 4 items present in a contract, a maximum of 50, and a mean of 26.7. We found that the number of contract items significantly affects the allocation of resources within a number of categories. Districts with a higher-than-average number of contract items increased allocation of funds to instructional costs, employee benefits, and salaries and decreased expenditures on the "other" category.

The magnitude of the impact of the number of contract items on resource allocation was illustrated by examining the distribution to different categories of total funds, depending on the number of contract items. For example, districts with four items allocated $0.45 per pupil for instructional costs, $0.02 per pupil for administration, $0.125 per pupil for employee benefits, $0.26 per pupil for teacher salaries, and $0.22 for "other" expenses for every dollar increase in total operating funds. Districts with the average number of contract items, 26, allocated 2 cents more per pupil for instruction, a half a cent more for employee benefits, and almost 2 cents more per pupil for teacher salaries while granting no increase to administration and cutting the "other" category by more than 3 cents per pupil. The trend continued for districts with higher-than-average salaries. Districts with 50 contract items allocated 50 cents per pupil to instructional costs, an increase of more than 5 cents over districts with the minimum number of contract items. The administration costs per pupil remained the same while the allocation to employee benefits increased only slightly.

The average teacher salary also was affected by the number of contract items. Teachers in districts with 50 contract items received, on an average, $1,855 more than those in districts with the minimum number of items.

The findings appeared to be consistent with the hypothesized influence of contract items. Two effects were discussed earlier. The first was to constrain the allocation decisions of the administration. The second effect was to allow teachers a voice in the way in which resources were allocated. The first effect, taken alone, did not indicate the direction

in which the impact should occur. The second factor, however, provided some clues. We expected that if contract items reflected the preferences of teachers, a greater number of items should direct resources towards instructional purposes, increase teacher benefits and salaries, decrease expenditures on administrative functions, and at least not increase the allocation to "other" categories. We found this pattern of results emerging in the estimates. Furthermore, we saw that since the teacher/student ratio remained unaffected by the number of contract items, the increase in average salaries, and salaries per pupil were achieved not at the expense of smaller teacher staffs but at the expense of the "other" category.

The Number of Contract Items and the Level of Spending for Education in a Community

Teacher bargaining organizations not only affect the internal allocation of funds as previously shown, but also have the potential of influence the allocation of funds within the community. Since teachers recognize that larger budgets lead to an increase in instructional expenses, salaries, benefits, and teaching staffs, collective bargaining units find it worthwhile to promote an increase in the total operating budget for the school district. Many avenues of collective influence are open to the teachers. They can align themselves with the administration since both parties tend to be strong proponents of larger school budgets (except, perhaps, when a superintendent is hired with a clear mandate to decrease spending.) The primary opposition to increased spending are members of the school board who may feel that they were elected in order to curb the

spending of taxpayers' money. Teacher unions may combat this opposition through political pressure, moral suasion, or the threat of disruption of service, making the school board appear ineffective in the management of the public schools.

Besides the influence of teacher organizations on school budgets, other factors affect the level of spending. Districts that are education-minded may be willing to spend more on public education. Families with many children find a greater benefit per tax dollar in spending for education since their support of public education is not directly based on the number of children in school. Also, communities with a higher proportion of families with children also provide greater finanical support for schools. The total operating budget per pupil is also affected by state aid equalization programs and federal support of federally mandated programs.

The impact of the number of students in a district on per pupil spending will depend upon whether public education is subject to economies of scale. Economies of scale occur in a labor-intensive service, such as education, primarily through the specialization of certain personnel. For example, small districts may not have sufficient demand for the full-time services of a reading specialist and would prefer to fill that position with a part-time teacher. However, especially when specialists are in short supply, part-time teachers may not be available and the district will have to employ the teacher full-time or go without the services. The latter may not be feasible since many states require that schools provide special services to qualified students. Larger districts, on the other hand, may have sufficient demand to keep a full-time reading

specialist busy. Thus, the cost per pupil of the larger district is lower than the cost per pupil in the smaller district.

We found that increases in the various sources of school revenue have different impacts on the increase of the total budget. A dollar increase in revenue per pupil from property taxes increases the total operating budget per pupil by $.94. A dollar increase in state aid per pupil increases school spending by $.88 per pupil while a dollar increase in federal aid increases school spending by only $.65. If each of the three sources of revenue increased by one dollar, we would expect the total operating budget per pupil to increase by $3 instead of the $2.47 that we observe. The missing $.53 can be accounted for in the substitution between the various sources. For example, a portion of the dollar per pupil received from the federal government may be used to reduce the amount of money needed from local property tax sources. The same is true for state aid but to a smaller extent.

The number of contract items has a positive effect upon the level of per pupil spending. This is consistent with our hypothesis of the potential effect of teacher organizations. We computed the level of spending for districts with different contract characteristics. Districts with the minimum of 4 contract items will spend on average $2,135 per pupil while districts with the mean number of contract items (26) will increase per pupil spending by $35 to $2,171. Districts with the maximum number of contract items increase their per pupil spending by another $36 to $2,207. Clearly, teachers are exercising some influence on the size of the school budget in order to promote their own interests.

Individual Contract Items and Resource Allocation

The impact of the scope of the contract on the allocation of resources within public school districts is the result of individual provisions constraining the behavior of the administration. We have postulated that scope of the contract reduces the discretion of the administration while at the same time increasing the influence of the teachers. Sheer numbers may not be the only reason for the significant relationship between scope and resource allocation. It may also be the case that a hierarchy of contract items exists. That is, districts that have only a few items will have similar items and additional items could be added to all contracts in the same order.

For example, the first item to be negotiated by a bargaining unit that has just been established in a district may be the grievance procedure, and after this, a means of settling negotiation deadlocks, such as binding arbitration. Also, one of the first steps is to define the bargaining unit and immediately after this, to stipulate provisions for sick leave and for supervision of the conduct of personnel. The order in which these items are entered on the contract is dependent upon the preferences of the teachers and administrators and the relative bargaining power of each.

New York. To begin our examination of whether certain contract items significantly affect the allocation of resources, we grouped the contract items into four major categories. Table 4 shows the items included in each group and the frequency with which they occur. The first group contains items relating to arbitration and grievance matters. Except for maintenance of standard clauses, over 80 percent of the districts contain provisions of this type. Moreover, since virtually every contract contains a grievance provision, this will be excluded from the analysis.

Table 4

New York Public School Contract Items

	% of Contracts With Items
A. Arbitration and Grievance	
Final stage-binding arbitration (9)	83
Evaluation procedures for teachers (38)	87
Maintenance of standards (30)	12
B. Labor Jurisprudence	
Staff reduction procedure (55)	37
Recall to position (58)	12
Seniority clause (57)	18
No reduction during contract (56)	04
Dismissal for just cause:	
tenured only (61)	38
non-tenured only (59)	39
probationary teachers only (60)	02
C. Working Conditions	
Class size (40)	56
Teacher preparation provision (53)	71
Education policy committee (44)	39
Tuition reimbursement (42)	04
Inservice provision (20)	40
Summer sabbaticals (6)	16
Number of aides specified (19)	03
D. Employee Benefits	
Personal days (65)	95
Pregnancy (68)	24
Religious holidays (69)	34
Jury duty (70)	68
Sick leave bank (76)	34
Retirement compensation provision (77)	42
Health insurance (82)	97
Dental insurance (83)	35
Life insurance (84)	23
Disability insurance (85)	13

The second group of contract provisions addresses labor jurisprudence issues. These include provisions on staff reduction, recall to position, seniority, dismissal, and severance pay. Provisions included in this group define the procedures by which the administration will lay off and dismiss teachers. Provision 55 establishes whether the contract contains a staff reduction procedure and then Provisions 57 and 62 reveal whether the procedure is based on seniority and whether severance pay is forthcoming. Provision 58 indicates whether a procedure exists to reinstate teachers once they are laid off. The remaining items deal with dismissal procedures unrelated to financial or declining enrollment problems.

The third group of contract items defines the working conditions of the teachers. The questions address whether contracts contain a provision to limit class size, guarantee teacher preparation periods, provide inservice programs, and establish educational policy committees. The most frequent appearing item in this group is the teacher preparation provision. A class-size provision is found in 56 percent of the contracts and inservice provisions and educational policy committees in roughly 40 percent. The least commonly provided item is the reimbursement of tuition expenses for continuing teacher education.

The fourth group of contract items relates to employee benefits. These include provisions defining the number of personal days, whether leaves will be granted for pregnancy, jury duty, and religious holidays, and the establishment of a sick leave bank and retirement compensation. Provisions in this group also designate whether health insurance, dental insurance, and disability insurance are provided by the district. The two most frequently found items in this group are personal days (95 percent) and health

insurance (97 percent). Provisions to grant leaves for jury duty are found in over half the contracts while pregnancy and religious holiday leaves are granted in one-third the districts or fewer. Although most districts provide a group health insurance plan, very few provide life and disability insurance. One-third provide dental insurance.

The impact of these individual contract items on the financial categories and teacher attributes could be varied and complex. As mentioned in the theoretical chapter, individual contract items can potentially affect the allocation of resources by specifying the amount of a resource that must be provided. For example, we expected districts that provide tuition reimbursement to allocate more funds to instruction and/or employee benefits since the funds for tuition reimbursement may come from either of these categories. In order to be able to repay teachers for tuition costs, districts either have had to increase the total operating budget or reduce expenditures in another category. It was difficult, a priori, to determine which of the other resources would be sacrificied in order that teachers could be reimbursed. In repayment, teachers may have been willing to forego their preparation period or accept increased teaching assignments.

A third possibility would be a reduction in salaries. However, all these possibilities include working conditions that teachers value and that may negotiate provisions to protect. If provisions insuring that teachers' working conditions could not be reduced are present in the contract, then the administration has no choice but to reduce spending on categories that are not valued by teachers. This may include administrative expenditures or expenditures on resources contained in the "other" category.

We should also point out that not every contract item reflects the preferences of teachers. Some items may be included at the request of the administration. Even though the item may limit the discretion of the administration, it may be preferred by administrators in order that the prescribed behavior could be justified by its inclusion in the contract. For example, the administration may want to establish certain criteria for evaluating teachers. If this criteria passes the scrutiny of the teachers during the bargaining process, then the administration can claim that teachers have accepted their criteria. The same may be true for educational policy committees. The committees may be initiated by the administration in order to demonstrate that teachers do have an active role in policy decisions. The actual power of the committee to establish policy is not guaranteed by its mere existence. Thus, we must take into consideration that the items may represent the preferences of the administration as well as the teachers when interpreting the results.

In order to measure the impact of individual contract items on the allocation of resources, each item was entered separately into the input demand equations as an interactive term with the total budget variable. The reasoning behind this approach has been explained in the previous chapter. In this way we could examine the effect of each item on the allocation of the total budget to the various budget categories.

For every one dollar per pupil increase in total operating budget, $0.48 goes to instruction. We found, however, that districts with a staff-reduction procedure allocate one cent more to instruction for every one dollar increase in spending than districts without the staff-reduction procedure. We found earlier that a one percent increase in total per operating

expenditures brought about a 0.22 percent increase in the teacher/student ratio. We found that districts with the class-size reduction provision had a slightly lower budget elasticity than districts without the provision. If the estimate of the interactive term were statistically significant then we could conclude that class-limitation provision reduces the increases in the teacher/student ratio resulting from an increase in the budget.

Michigan. For the analysis in Michigan, ten individual contract items were entered separately into the resource allocation equations. The first noticeable result was that all contract items affected a particular resource category in the same direction. For example, districts with a contract containing any one of the ten items have lower-than-average expenditures on total salaries. However, not all the contract items are significant, which indicates that it is not simply the presence of an MEA contract, regardless of its content, that is important, but rather it is the content of the contract that affects the allocation of resources.

Since individual contract items could be instrumental in redirecting the allocation of resources, it was interesting to compare the effects of a number of contract items that New York and Michigan school districts have in common. The first contract item to be considered is the reduction-in-staff procedure. Recall that in New York, districts that contained a reduction-in-force provision spent more on salaries per pupil than districts without the provision. The higher payroll costs were the result of the significantly higher average salaries paid to teachers without any reduction in the teacher/student ratio.

Michigan school districts responded to reduction-in-force provisions in the opposite way. Declining enrollment districts with this provision paid lower average salaries, but maintained a larger staff per student than districts without the provision. This is especially true for reduction-in-force provisions based on seniority.

However, it appeared that the larger staff was not necessarily comprised of more senior teachers. On the contrary, we found that teachers in districts with the seniority provision had fewer years of experience on an average than teachers in districts without the provision. Thus, part of the reason for lower average salaries is the lower average experience possessed by the teaching staff. Therefore, the results do not necessarily mean that districts with the seniority provision offer lower salaries for comparable teachers than districts without the seniority clause. Rather, districts with the seniority clause are able, for one reason or another, to replace senior teachers with less experienced ones. The nature of the turnover in teacher personnel is somewhat peculiar given the intent of a seniority clause, but the results appear to be consistent with the findings reported for New York.

Another contract provision that elicits different responses from districts in the two states is that related to teacher preparation. In New York teacher preparation provisions have little impact on the allocation of resources whereas in Michigan teachers covered by this provision receive a lower salary on average. This is partially a reflection of the less experienced staff associated with this provision, but also suggests a substitution of teacher preparation for higher salaries.

Michigan and New York districts responded in a similar fashion to a number of provisions. Two that were particularly prominent are the recall and class-size provisions. The similarity in responses to the recall provision were more evident in increasing than declining enrollment districts. This is primarily due to the fact that recall provisions have very little significant impact in declining enrollment districts since those districts do not have much opportunity to rehire teachers who have been laid off. In both states, districts that had the provision allocate more funds to instruction. However, dissimilarities did appear. Districts in Michigan were able to achieve a slightly higher teacher/student ratio and average salaries, an accomplishment not matched in New York. Part of this difference may be explained by the greater emphasis placed on recall provisions in Michigan. Over 60 percent of the districts in Michigan had this provision whereas only 12 percent of the New York districts negotiated this item.

Similarities in the responses of districts to the class-size provision occurred primarily in declining enrollment districts. We found that districts in both states had a lower-than-average teacher/student ratio when covered by a class-size provision. However, in Michigan the reduction in the teacher/student ratio was significant enough to bring about a reduction in payroll costs as well.

When comparing the effects of contract items in Michigan and New York, we found that bargaining units in Michigan were able to negotiate contract items that provided direct benefits to teachers only after making concessions in other areas. This was evident in the fact that none of the contract

items significantly affected the allocation of resources to instruction whereas a number of items caused an increase in funds to administrative and support services. Consequently, teachers who achieved greater job security by negotiating a reduction-in-force provision or a smaller class-size provision had to accept lower average salaries.

Teachers in New York, on the other hand, appeared better able to negotiate these provisions without compromising other benefits. For instance, teachers who negotiated particular provisions were able to increase the amount of funds going to instruction and salaries at the expense of funds spent on administrative and support services. A good example of the ability of unions in New York to direct the allocation of funds to personnel-related resources was found in the case of reduction-in-force procedures. Districts with this provision were able to avoid any significant layoffs while increasing the average salary by maintaining more senior teachers. Districts were able to meet the increased payroll costs only by spending less on administrative and support services. Districts in Michigan with the seniority clause retained a higher teacher/student ratio than districts without the provision only by replacing more senior teachers with less experienced ones.

The differences across states in response to certain contract items may be partially explained by the difference in goals of the two dominant unions in each state. It appeared that unions in Michigan were more concerned with staff reduction than districts in New York and were thus willing to make compromises to achieve job security. This difference in preferences was supported by the fact that contracts in Michigan contained items related

to staff reduction much more frequently than contracts in New York. In fact, the difference was more than 2 to 1 in some instances.

Other possible explanations centered on the statutory environment of the two states and the nature of the bargaining process. These issues will be addressed in more detail in the next chapter.

Arbitration and Grievance Items

The impact on resource allocation of the items within this group was mixed. Districts with the binding arbitration provision allocated fewer dollars to instruction than districts without the provision. Districts with evaluation procedures and maintenance of standard clauses showed no difference in the allocation of funds to instruction than districts without these provisions. The impact of the evaluation provision was found in the allocation of funds to administration and teacher salaries. It appears that districts that evaluate teachers spent more on administration at the expense of teacher salaries. Furthermore, the increase in administrative expenses was completely offset by the same dollar decrease in salaries.

If teachers promote evaluation procedures, it appears that they are willing to accept a slight decrease in the overall expenditure on salaries in exchange for this service. On the other hand, if the administration is the primary advocate of teacher evaluations, then the administration's preferences are met at the expense of the teachers. The maintenance of standard clause did not appear to benefit teachers, either through salary increase or class-size reduction. It did appear, however, to have increased very slightly the expenditures on administration. The increase in

administration was achieved at the expense of expenditures on "other" functions. If teachers derive benefits from services provided by the "other" category, then this clause may be detrimental to the working conditions of teachers.

Overall, the results showed virtually no benefit accruing to teachers from the presence of either one of these provisions. In fact, it appears that teachers were sacrificing compensation and expenditures on working conditions in order to maintain arbitration and grievance provisions.

Labor Jurisprudence Items

Contract items related to labor jurisprudence issues appear to provide certain benefits to teachers. We found that all items that were statistically significant increased the allocation of funds to instruction. Allocation of funds to employee benefits and teacher salaries were also increased due to the presence of contract items. In order to compensate for these increases, less was allocated to administration and the "other" category.

In particular, we found that districts with a staff-reduction provision allocated $.01 per dollar more of total operating expenditures to instructional costs than districts without the provision. The increase in instructional expenses went primarily to salary increases for teachers and no significant portion was spent to increase the teacher/student ratio. Accompanying the increase in salaries per pupil was an increase in expenditures on employee benefits. The increases in expenditures on instruction and employee benefits were more than compensated for by a decrease in the expenditures on inputs in the "other" category.

The presence of a reduction-in-force procedure only indicates that some methodical procedure will be followed when staff reduction is necessary. Two criteria for staff reduction are described in the contract. The first is a procedure based on seniority and the second is no reduction at all during the legnth of the contract. We found that about half of the districts had a reduction-in-force procedure based on seniority and about 12 percent had no reduction-in-force procedure.

The seniority clause appeared to increase instructional expenditures by $.01 for every dollar increase in total expenditures. The increase in instruction was shared equally by an increase in teacher salaries and an increase in the teacher/student ratio, although neither estimate was statistically significant. A no-reduction clause had little effect on instructional expenditures but primarily increased expenditures for employee benefits.

A curious finding was the negative impact of the no-reduction clause on the teacher/student ratio. The results showed that districts with the clause have a lower teacher/student ratio than districts without the clause. This may illustrate one of the problems of interpreting results from cross-sectional analysis. Cross-sectional analysis only permits the comparison of districts with a contract item and districts without the item. We had no time sequence from which to infer a direction of causation. We did, however, draw causal conclusions by postulating that contracts are exogenous to the decision-making process. That is, contracts affect the allocation of resources, but the allocation of resources does not significantly affect the appearance of a contract item. Although our analysis of the determination of contract items showed that this is usually the case, it does not

always hold. Therefore, we may have been observing a situation in which districts with lower teacher/student ratios were able to negotiate the no-reduction clause in the contract because reduction of one teacher would significantly affect the entire teaching staff, whereas larger districts would not be as greatly affected.

Districts that provide severance pay for laid off teachers allocated more funds to instruction at the expense of resources in the "other" category. The increase in instructional funds was used for the additional compensation of teachers at the time they left the district for reasons other than retirement.

Besides adopting procedures to lay off teachers, some districts had methods for possible reinstatement of staff who have been laid off as a result of reduction in force. Although only 12 percent of the districts contained this provision, districts that possess the item allocate more funds to instruction and less to employee benefits. For every dollar increase per pupil in the total operating budget, an additional cent was spent on instruction in districts with a recall provision (compared to those without such a provision). The increase in instructional expenses was completely offset by a decrease in expenses in the "other" category. The additional increase in instructional expenses went primarily to teacher salaries with no significant effect on the teacher/student ratio.

Labor jurisprudence contract items also address the dismissal of teachers for other than financial reasons. District contracts contain provisions insuring that teachers will not be dismissed except for just cause. The contracts do not state what the causes are but do list which teachers

are protected. We found that 38 percent of the New York districts contained this provision for tenured teachers, 39 percent for nontenured, and 27 percent for probationary teachers. The effect of these three contract items was very similar. In all three cases, the presence of a dismissal clause decreased the allocation of funds to the administration.

Working Conditions

Districts contain contract provisions that relate to the working environment of teachers. We analyzed the impact of a number of contract items but found that very few had any significant impact on the allocation of resources. Only the tuition reimbursement item yielded statistically significant coefficient estimates. We found that districts which reimburse teachers for tuition costs allocated more funds to instruction and employee benefits and fewer funds to resources in the "other" category. The primary reason for these increases, of course, was to account for the extra compensation given teachers. New York districts included tuition reimbursement under the instructional expenditures category. The slight increase in expenditures on employee benefits was difficult to account for until we found that districts which spent a higher proportion of the total budget on employee benefits also reimbursed teachers for tuition costs.

Employee Benefits

Teacher contracts specify a number of items that relate to teachers' compensation packages. These benefits are different from working conditions in that they are private benefits and not the public or collective benefits

associated with working conditions. For example, the class-size provision is a public benefit since all teachers in the school are affected by it, whereas the provision of life insurance is accrued as a private benefit. Items included in this group are not necessarily attained only through collective bargaining. Many districts that are not organized provide teachers with certain fringe benefits as a general personnel policy.

Since employee benefits such as the various insurance policies are provided for a nominal fee or at no charge to the teacher, we expected to find that expenditures on salaries and employee benefits would increase in districts with these provisions. In the accounting system established by the state for New York public schools, most expenses for insurance policies are entered under employee benefits. Therefore, any cost to the district should be observed within this category.

Districts providing insurance coverage to teachers had higher expenditures for instruction or employee benefits than districts that did not have these provisions in the contract. We found that districts providing life insurance policies spent roughly $10 more per pupil on employee benefits than districts without this provision. Dental insurance required an expenditure of approximately $8 per pupil more. Life insurance also increased expenditures on instruction by $37 per pupil.

The impact of these provisions on instructional expenditures was curious. According to the accounting ledgers, these benefits should not have been paid through the instructional account. This may illustrate another case in which the direction of causation was not as anticipated. Instead of the presence of contract items determining the allocation of resources, the

allocation of resources may determine the presence of contract items. In particular, districts with higher expenditures on instruction may be more inclined to provide insurance benefits for teachers than districts with lower expenditures.

However, when we examined the impact of these provisions on the individual salaries of teachers (not the district average) we found that teachers employed by districts providing life and health insurance were paid less in take-home salary than districts not providing this coverage. After adjusting the salary level of each teacher for level of experience and education, sex, and the characteristics of the district and community, we found that districts with life insurance deduct $708 from the teacher salaries and districts with health insurance pay $1,143 less per year.

Collective Bargaining in Declining Enrollment Districts

One of the most pressing problems facing many school districts across the country is the decline in the number of school-age children. Districts that only a short while ago were complaining of an acute shortage of teachers are now faced with too many tenured teachers, too many schools, and too few students. Furthermore, taxpayers who have fewer children to educate are more reluctant to grant budget increases to public schools even though the costs of education continue to climb. The combined decrease in enrollments and lack of financial support have forced many districts to close neighborhood schools, lay off teachers, and cut out extracurricular activities.

New York. Districts in the state of New York are no exception to the general trend in declining enrollments across the country. Between 1972 and 1977, total enrollments in the state, excluding New York City, fell from 2,363,510 students to 2,232,380, a reduction of a little over 131,000 students. The number of classroom teachers in public schools over the same period dropped by almost 13,000 from 181,558 in 1972 to 168,814 in 1977. However, the decrease in the number of students was not uniform across all grades. Although the number of students in grades K-6 decreased from 1,281,400 to 1,118,889 the number of students in grades 7-12 increased by over 31,000. Moreover, not every school district experienced enrollment declines. Approximately 26 percent of the public school districts with grades K-12 experienced increasing enrollments. Districts with increasing enrollments were found primarily in less urbanized areas.

The decline in enrollments has prompted many teacher unions to bargain for provisions that address the problem of staff reduction. Over 42 percent of the districts that have faced declining enrollments have provisions that prescribe some orderly procedure of staff reduction. Nineteen percent of the districts based this procedure on seniority and only 4 percent had a no-reduction clause in the contract.

Districts that faced increasing enrollments were also concerned about the possibility of staff reductions, but to a lesser extent. Only 29 percent of these districts had staff-reduction provisions, with 20 percent of the districts basing the procedure on seniority and 3 percent negotiating a no-reduction clause.

Table 5 shows that the characteristics of school districts faced with increasing enrollments different from those experiencing decreasing enrollments.

Table 5

Mean Values of New York School District Characteristics for Increasing and Decreasing Enrollment Districts, 1976-77

	Increasing	Decreasing
Enrollment	3,376	3,492
Op. Exp/Pupil	2,076.59	2,222.83
Teachers	164	177
Teachers/Pupil	.050	.052
Average Salary	14,657	15,324
Average Experience	10.93	12.50
% Masters	66	69
Inst. Exp./Pupil	1,115.24	1,231.31
Adm. Ex./Pupil	56.47	69.39
Benefits/Pupil	303.64	337.25
Salaries/Pupil	682.54	750.56
% Urban	30	50
% NEA	8	12
% Non-affiliated	7	8
% Traditional	94	95
% Cluster	13	09
% Open	12	12
Benefits/Teacher	6,710.	7,374.
% Instructional Exp.	54	55
% Adm. Exper.	03	30
% Salary (of Inst. Exp.)	61	61
% Benefits	15	15

We found the average enrollment of the two types of districts to be about the same. Declining enrollment districts were slightly larger. Declining enrollment districts also had larger teaching staffs. A greater percentage of teachers in declining enrollment districts had master's degrees, 69 percent compared with 66 percent, and had an average of almost 2 more years of experience, 12.5 compared with 11 years. Furthermore, declining enrollment districts had a slightly higher teacher/student ratio.

Districts facing declining enrollments seem to have been locked into maintaining slightly larger teaching staffs, primarily because of the inability to lay off tenured teachers (which in turn could be partly due to the efforts of the teacher unions). Districts experiencing increasing enrollments, on the other hand, may be reluctant to hire as many teachers as they could because of the possibility of facing declining enrollments in the future.

We expected that staff reduction related to contract items should have more of an impact on resource allocation in declining enrollment districts than increasing enrollment districts. We also expected that if declining enrollment districts had to support larger-than-normal staffs with no significant increases in budgets, then other contract provisions may impinge to a greater degree on the allocation of resources.

We tested the effect of declining enrollments on the impact of contract items on resource allocation by distinguishing in the estimation equations between the two types of districts.

Consequently, we were able to separate out the effects of contract items in districts facing declining enrollment from districts facing

increasing enrollments in accordance with our hypothesis that contract items would be more of a factor in the former districts. At the same time, we could investigate the difference in allocation behavior districts faced with decreasing enrollment and increasing enrollment subject to the same constraints imposed by contract items.

A number of interesting patterns emerged from the results. First, many of the estimates associated with instruction, benefits, and salaries were statistically significant and negative while the estimate associated with the "other" financial category was statistically significant and positive. This indicates that districts facing declining enrollments allocated more dollars to instructional costs and salaries and fewer dollars to "other" costs than did districts experiencing increasing enrollments. Consequently, districts facing declining enrollments had to put forth greater financial effort than districts with increasing enrollments in order to support the teaching staff. This was done primarily at the sacrifice of nonpersonnel expenditures. No reduction in administrative expenditures was found. This was supported by the fact that districts with declining enrollments have larger teaching staffs and higher teacher/student ratios than the other districts. Also, declining enrollment districts had a more experienced and more highly educated teaching staff, which increased personnel costs.

Examination of the differences in impact of contracts in increasing and declining enrollment districts yielded some surprising results. Contrary to our hypothesis, contract items related to staff reduction and dismissal affected districts facing increasing enrollments to the same extent

as they affected districts experiencing declining enrollments. The results in Table 6 show that the estimates relating to the effect of contract items on the respective types of districts had the same sign and usually close to the same level of statistical significance. We did, however, find that the estimates were slightly larger for increasing enrollment districts than for declining districts. For example, the presence of the staff-reduction procedure directs an additional $0.08 for each additional $10 increase in per pupil expenditures in declining enrollment districts compared to a $0.03 increase in increasing enrollment districts. Other comparisons are obvious from the Table.

Despite the strong similarities between the two types of districts, there was one difference that should be noted. We found that for districts facing increasing enrollments the seniority clause raised the average salary of teachers in these districts while the average salary of teachers in declining enrollment districts remained unaffected. On the other hand, the seniority clause raised the teacher/student ratio in declining districts while leaving the teacher/student ratio unchanged in increasing enrollment districts.

These results may be explained by the fact that reduction in staff is also affected by the class-size-limitation provision. Districts that have established a particular teacher/student ratio to follow can use it in cases of both declining and increasing enrollments. Teachers may have originally sponsored this provision in order to reduce the teaching load during the early 70's when enrollments were increasing. However, as enrollment decreases, what was once an upper limit on the class size now

Table 6

Impact of Labor Jurisprudence Contract Items and Class Size Provision
In Increasing and Declining Enrollment Districts

	Inst/Pupil		Adm/Pupil		Benefits/Pupil		Salaries/Pupil		T/S		Average Salary	
	-	+	-	+	-	+	-	+	-	+	-	+
55	.008	.013	.001	-.008	.002	.003	.006	.009	.005	-.001	.034	.030
	(2.03)	(1.68)	(.55)	(1.70)	(1.19)	(1.11)	(1.74)	(1.30)	(.56)	(.08)	(2.29)	(1.02)
58	.006	.025	.003	-.004	.0002	.005	.003	.016	.002	-.011	.032	.067
	(1.03)	(2.19)	(.71)	(.58)	(.10)	(1.32)	(.53)	(1.61)	(.17)	(.43)	(1.40)	(1.57)
57	.007	.013	.002	-.002	-.001	.002	.0002	.016	.020	-.012	.014	.060
	(1.42)	(1.39)	(.69)	(.26)	(.52)	(.74)	(.04)	(2.26)	(1.67)	(.54)	(.78)	(1.74)
56	-.005	.013	.005	.001	.024	.012	.002	.008	-.036	-.018	.040	.061
	(.46)	(1.44)	(.88)	(.10)	(.65)	(2.06)	(.20)	(.54)	(1.55)	(.46)	(1.04)	(.96)
61	-.004	.006	-.003	-.010	-.003	.003	-.006	.004	.009	.012	-.010	.015
	(1.03)	(.80)	(1.15)	(2.13)	(1.77)	(1.12)	(1.85)	(.62)	(.99)	(.70)	(.66)	(.55)
59	-.003	.009	-.003	-.010	-.002	.002	-.006	.003	.010	.008	-.009	.020
	(.81)	(1.12)	(1.23)	(1.89)	(1.67)	(.94)	(1.71)	(.48)	(1.04)	(.48)	(.62)	(.75)
60	.000	.004	.001	-.013	-.002	.002	-.003	.002	.005	.017	.003	.013
	(.01)	(.51)	(.42)	(2.82)	(1.48)	(.63)	(.68)	(.36)	(.46)	(.96)	(.15)	(.44)
62	.015	.035	.003	.010	.000	.009	.004	.037	-.016	.042	.037	.060
	(1.64)	(1.79)	(.53)	(.81)	(.02)	(1.37)	(.53)	(2.23)	(.77)	(.94)	(1.09)	(.83)
40	-.004	.017	.003	.0003	.0005	.005	-.002	.012	-.014	.013	.0006	.014
	(1.07)	(2.42)	(1.36)	(.08)	(.39)	(1.98)	(.49)	(2.00)	(1.56)	(.81)	(.04)	(.52)
									(Elasticity)		(Elasticity)	

becomes a lower limit on the number of teachers per student that the administration will hire. Districts that strictly adhere to a specific teacher/student formula based the reduction in staff on the decrease in enrollments. The results showed that districts facing declining enrollments cut their staffs to a greater extent when a class-size limitation provision was present. Consequently, when the class-size provision is present in the contract, the administration will use this rationale to reduce staff.

The administration may be restricted by other criteria of staff reduction as contained in additional contract provisions. For example, if layoffs are governed by a seniority clause then the freedom of the administration to base staff reduction solely on the class-size provision is diminished. We found that districts, even when experiencing declining enrollments, have a higher teacher/student ratio when the seniority clause is present than otherwise.

Public school districts in Michigan experienced an even greater decline in enrollment than districts in New York between 1972 and 1976. Only 8 percent of the Michigan districts included in the sample experienced any increase in enrollment over the 5-year period whereas over 20 percent of the New York districts recorded increases. Michigan districts that reported increases in enrollment grew an average of 9 percent while declining enrollment districts lost an average of 10 percent of their students.

The characteristics of declining and increasing enrollment districts differed significantly in many instances, as is shown in Table 7. Declining enrollment districts were generally much larger than increasing enrollment

Table 7

Mean Value of Michigan District Enrollments by Change in Enrollment, 1976-77

	Decline	Increase
Enrollment	2,987	1,875
Operating Expense per Pupil	1,075.48	1,034.82
Instructional Expense per Pupil	740.26	671.76
Employee Benefits per Pupil	10.05	9.67
Salaries per Pupil	531.66	492.75
Other Expense per Pupil	351.43	364.67
Average Salary	12,234	11,315
Percentage of Teachers with Masters	25.79	22.63
Average Years Experience	8.53	7.15
Teachers	126	80.66
Teacher/Student Ratio	.044	.0441
Dropout Rate	6.2	5.5
Percent Minority	6.44	3.66
Percent Parents College Educated	20.2	18.89
Family Size	2.52	2.61
Percentage Families with Children	58.9	58.13
Percent Change in Enrollment*	-10.1	9.2
Percent Change in Instruction	26.9	21.38
Percent Change in Masters	13.2	8.8
Percent Change in Experience	2.7	-8.9
Percent Change in Teachers	-6.8	7.6
Percent Change in Teacher/Student Ratio	4.2	-0.15
Percent Change in Average Salaries	11.9	11.9
Percent Change in Salaries	16.1	11.7
Percent Urbanized	36.9	16.2

*Percentage Change calculated between 1972 and 1976.

districts and more frequently found in towns and rural communities. Despite the loss of students, declining enrollment districts spent close to $40 more per student than increasing enrollment districts, paid higher salaries to teachers, had a slightly older and more educated staff, and spent a slightly higher percentage of the total budget on instruction.

Declining enrollment districts had a higher percentage increase in instructional ependitures than increasing enrollment districts. This is partially explained by the fact that the percentage reduction in the number of teachers in declining enrollment districts was 3.3 percent less than the percentage reduction in students. Increasing enrollment districts had only 1.2 percent differential between the two percentages. Thus, declining enrollment districts actually experienced an increase in the teacher/student ratio of 4.2 percent while increasing enrollment districts recorded a slight decline in the teacher/student ratio. Both types of districts, however, had the same percentage increase in average salaries, but because of the ability to maintain a larger teaching staff, declining enrollment districts spent an additional 3.3 percent on total salaries.

The turnover of teachers in declining enrollment districts appeared to affect primarily the younger, less experienced teachers. We found that the 6.8 percent decline in teaching staff resulted in a 2.7 percent increase in the average years of experience and a 13.2 percent increase in the percentage of teachers with master's degrees. Clearly, more experienced staff was being retained at the expense of the younger, less experienced teachers.

Union representation was fairly even over the two types of districts. Roughly, 92 percent of the declining enrollment districts were represented by recognized bargaining units while nearly 90 percent of the increasing

enrollment districts were represented. Bargaining units affiliated with the NEA accounted for 84 percent of the declining enrollment districts, but for only 75 percent of the increasing enrollment districts. The composition of the contracts in the two district types differed only slightly. Table 8 shows that the most noticeable difference was the slightly higher occurrence of staff-reduction-related provisions in declining enrollment districts.

The Effects of Collective Bargaining on the Mobility of Teachers

We have considered how school administrators allocate educational resources depending on their own information and the information provided by collective bargaining contracts. In the previous analysis, we assumed that administrators unilaterally made decisions about the size and composition of the teaching staff. This is not necessarily the case. Although administrators choose the number of teachers to employ and have set of attributes in mind when hiring teachers, the decisions of teachers to seek or leave employment are also important in determining the overall characterstics of the teaching staff. The propensity of certain teachers to quit or to apply for employment will affect the composition of the teaching staff which, in turn, may affect not only the quality but also the cost of education. The quality of education is affected by the high turnover rate accompanying quits and the concomitant change in payroll costs brought about by changes in the education and experience levels of teachers.

Following the work of Freeman and Medoff (1979), we examined whether collective bargaining influences quit rates. Unlike earlier work in this area,

Table 8

Percentage of Michigan School Districts with Selected Contract Items by Change in Enrollment, 1976-77

Labor Jurisprudence	All	Declining	Increasing
Staff Reduction Based on Seniority	73.0	73.6	67.9
Staff Reduction Based on Certification	71.0	71.4	64.3
Staff Reduction is Grievable	66.0	66.4	60.7
Recall Based on Inverse Order of Reduction	61.0	60.6	60.7
Working Conditions			
Class Size is Limited	50.1	50.1	51.8
Class Size Relief: Add Teachers	7.5	7.3	8.9
Class Size Relief: Add Aides	19.5	19.5	19.6
Aides Relieve Teachers of Non-professional Duties	22.3	22.2	23.2
High School Prep Period	67.3	68.2	58.9
Elementary Prep Period	37.8	37.6	39.2
Duty-Free Lunch	68.8	69.5	62.5
Union Strength			
Payment of Dues	57.5	56.9	62.5
Enforcement Procedures	58.0	58.5	53.5
Release Time for Officers	8.5	8.5	8.9

however, we were able to consider the impact of individual contract items on quits rather than the differential behavior on union versus nonunion districts. Although the hiring of new teachers is discussed, the major focus of this analysis was on quit behavior for two reasons. First, teachers have more discretion in quitting than being hired since the administration decides who to hire. Second, collective bargaining is more likely to influence the decision to quit rather than the decision to seek employment with a particular school district.

Employment is a two-sided arrangement dependent upon the decisions of school administrators and teachers. Job tenure (or quits) results from the joint behavior of administrators, who decide whether or not to retain a teacher, and employees who choose to stay or go. The basic principle for maintaining the employment relation is that neither side expects to do better in the outside market. Administrators cannot hire any better qualified teachers at the same salary, and teachers cannot find any better working conditions at the same salary. Thus, teachers will remain at their present positions if the discrepancies between desired and actual working conditions are not sufficiently large to warrant a search for alternative employment.

Seeking alternative employment is not the only option open to teachers who are dissatisfied with their present situations. Instead of leaving a school district because of suboptimal working conditions and salary, teachers may choose to voice complaints about their employment situation in hopes that the administration will take action to change the undesirable features of the job.

Teacher unions provide a forum for teachers to express their opinions about level of compensation and other conditions. Moreover, unions function as a vehicle to bring about change through the strength of collective action. Thus, teacher unions offer a viable option to the free market alternative of quitting in response to undesirable employment arrangements.

Teacher unions can reduce teacher turnover in a number of ways. First, teacher unions offer a formal mechanism for resolving employee relation problems that otherwise would result in the departure of teachers. One of the most important outcomes of collective bargaining has been the creation of formal channels for handling and arbitrating teacher grievances. The grievance and arbitration system gives teachers a mechanism for resolving these conflicts with the administration. Although the system will not eliminate grievance-related quits, the overall exit rate will be reduced as a result of the period of suspended action during the grievance and abritration procedure.

Second, the negotiation process itself can be expected to reduce quits. Teachers who seek different working conditions might lobby for the changes within their own district through contract negotiations rather than search for districts that already possess the desired conditions. However, since working conditions are a public good and the changes presented at the bargaining table represent the preferences of the group, the preferences of the individuals may not be represented and a teacher might choose to leave the district anyway. Workers whose demands are met will decide to remain with the district. Thus, quits will be lower than they would have been if the voice mechanism were not available.

Third, unions provide teachers with a voice in establishing procedures for reducing the teaching staff due to declining enrollment. Traditionally, teacher employment has been governed by the tenure system. Recently, however, the overall decline in enrollments has resulted in both nontenured and tenured teachers being laid off. Negotiated procedures for reducing the teaching staff help alleviate the anxiety and loss of morale accompanying layoffs, and thereby reduce voluntary resignations. Time-consuming layoff procedures may also increase the costs of reducing staff, thereby giving districts an incentive to find other revenues or other ways to cut costs besides layoffs. In both cases, quits may be reduced by the establishment of reduction-in-force provisions.

Besides offering teachers a voice in their working conditions, teacher unions can be expected to reduce exit behavior through their influence on wages and fringe benefits. Unions can raise salaries and employee benefits through the monopolistic position they maintain in offering teacher services. Chambers (1977) estimates that unions are able to increase salaries by as much as 16 percent over salaries received by nonunion teachers. Teachers who consider salaries to be a primary attraction in a district will have more incentive to remain with union districts than nonunion districts.

The impact of teacher collective bargaining in reducing the number of quits can be measured by considering the differences between quit rates in districts with reduction-in-force procedures based on seniority and the quit rates in districts without such provisions. We examined the behavior of individual teachers and not the aggregate behavior of all

teachers in a district. This formulation considers the impact of various factors on the odds that an individual will leave the district. The coefficients of the explanatory variables measure the partial effects of each factor on the odds of quitting. This method of analysis is different from a simple frequency analysis because it allows us to consider the impact of certain factors while holding constant other important factors. Because of this the two methods may yield slightly different results.

Four groups of factors were considered in the departure equation: characteristics of the teacher, characteristics of the student body and district, the difference in salary received by a teacher and those paid elsewhere, and characteristics of the collective bargaining agreements. Age and personal qualifications of teachers are important factors in mobility. Studies have shown that individuals have the greatest mobility when they are younger than 35 years. After this age, families become less mobile because of children and personal ties to the community. Personal qualifications are also important in finding employment elsewhere. Teachers with more education and experience than the average have a greater chance of finding employment elsewhere. The education level also may indicate the level of motivation of the teacher. However, teachers may become over-qualified and may thus be hampered in seeking employment in another school district. Sex may also play an important role in explaining quit behavior. Due to childbearing and child rearing, female teachers are more likely than male teachers to enter and leave the labor force with some frequency. This is especially true for female teachers in the childbearing years.

The characteristics of the school district can have an effect on the decision of teachers to quit. Districts with students who are less motivated and who have discipline problems may have a higher turnover rate. On the other hand, districts with a high level of parent support, as measured by the percentage of parents who have attended college, may experience a low turnover rate.

Teachers in districts facing declining enrollments may find working conditions deteriorating, job security diminishing, and opportunities for advancement disappearing. Thus, even though these teachers may not be laid off, they may choose to find more promising employment.

The difference in the salary actually received and one paid elsewhere is measured by the difference between the actual salary and the predicted salary of the individual teacher. The predicted salary is based on the attributes of the teacher and the imputed value of the employee benefits received by the teacher. The difference between the actual and the predicted provides a comparison of the salary of a particular teacher with the average salary in New York of teachers with the same attributes. We would expect that if the salary package is an important determinant of departures, then teachers would more likely depart when their salaries are below rather than above the average.

Past studies have considered the presence of a union to imply that reduction-in-force procedures are present. This is not necessarily the case. In fact, less than half of the districts in New York that have contracts include a reduction-in-force procedure and only 18 percent of the districts base reduction in force on seniority. Therefore, it is necessary

to divide the districts, not by the fact that they are represented by a union, but rather by the fact that they actually have a reduction-in-force procedure. In this analysis, we will concentrate primarily on reduction-in-force procedures that are based on seniority.

We would expect that senior teachers in districts with a seniority clause would be less likely to leave than those in districts without the provision. At the same time, we would expect that newer teachers covered by the seniority clause would be more likely to leave since they would be the first to be laid off in times of declining enrollments.

The Analysis of Teacher Quits

A random sample of 15,000 teachers from one fifth of the public school districts in New York was used to examine quit behavior. The data were obtained from the personnel records of each school district. Although the records did not contain specific information on whether the teacher had left the district, we were able to compare the personnel records of two consecutive years, 1976-77 and 1977-78, to identify teachers who no longer were employed with the district.

Teachers have a number of options when leaving a district. They can obtain employment in another public school district, leave public school teaching for another occupation, or retire. It is possible to trace the whereabouts of the teacher if that teacher remains within the employment of public school districts in New York. However, since this process would have involved searching through over 138,000 records, we felt that little would be gained by the additional information.

The sample of teachers was fairly consistent with the entire population of public school teachers in New York, although some minor differences did exist. Teachers in the sample earned, on an average, $16,451 compared with the state average of $15,147. This may be attributed to the fact that the teachers in the sample come from larger districts than the state average. The percentage of teachers with master's degrees and the total years experience of the average teacher are roughly the same for both groups. Community and student characteristics are also comparable. A few contract items are found more frequently in the sample than the state population, primarily due to the fact that larger districts are considered in the sample. However, the differences are not significant.

The analysis shows that in 1977-78 2,225 teachers or slightly under 18 percent of the teachers sampled were no longer employed in the same district they were in the year before. Tables 9-11 show the characteristics of the teachers who left the districts. Table 9 shows that of those who quit, over 54 percent had master's degrees or higher. Table 10 shows departures by age. Teachers who were under 28 years old had the highest propensity to quit among the five age groups considered, with 22 percent of the teachers in this group leaving. The percentage of quits decreased as teachers became older. The trend continued until teachers in certain age brackets reached retirement age, at which time the percentage increased again.

We found that female teachers were more likely to quit than male teachers. The figures in Table 11 show that 19.33 percent of the female teachers quit during the two-year period while only 15.61 percent of the males left the district. Of those teachers who left, we found that 61.94

Table 9

Departures By Master's Degrees or Greater

	No Master's	Master's or Greater	Total
Remain:	4,638	5,754	10,392
	36.75%	45.61%	82.37%
	44.63%	55.37%	
	81.96%	82.70%	
Depart:	1,021	1,204	2,225
	8.09%	9.54%	17.63%
	45.89%	54.11%	
	18.04%	17.30%	
Frequency	5,659	6.958	12,617
Percentage	44.85%	55.15%	
Row percentage			
Column percentage			

Table 10

Departures by Age

	-28	28-38	38-50	50-60	60-	Total
Remain:	2,177	3,848	2,873	1,323	171	10,392
	17.25%	30.50%	22.77%	10.49%	1.36%	82.36%
	20.95%	37.03%	27.65%	12.73%	1.65%	
	77.03%	84.39%	86.04%	81.07%	65.52%	
Depart:	649	712	466	309	90	2,226
	5.14%	5.64%	3.69%	2.45%	0.71%	17.64%
	29.16%	31.99%	20.93%	13.88%	4.04%	
	22.97%	15.61%	13.96%	18.93%	34.48%	
Frequency	2,826	4,560	3,339	1,632	261	12,618
Percentage	22.40%	36.14%	26.46%	12.93%	2.07%	100.00%
Row Percentage						
Column Percentage						

Table 11

Departures by Sex

	Male	Female	Total
Remain:	4,514	5,670	10,184
	36.47%	45.81%	
	44.32%	55.68%	82.28%
	84.39%	80.67%	
Depart:	835	1,359	2,194
	6.75%	10.98%	
	38.06%	61.94%	17.72%
	15.61%	19.33%	
Frequency	5,349	7,029	12,378
Percentage			
Row percentage	43.21%	56.79%	100.00%
Column percentage			

percent are female and 38.06 percent are male. If there were no difference in behavior between male and female teachers, we would expect the percentages to reflect the percentage of each sex in the sample, 43.21 percent and 56.79 percent respectively. Therefore, roughly 5 percent more female teachers quit than we would expect if the behavior were identical.

Table 12 shows the difference in the number of departures of teachers in declining and increasing enrollment districts. Districts experiencing a decrease in enrollments between 1972 and 1978 lost 18.61 percent of their teachers while districts facing increasing enrollments lost 2 percent fewer teachers.

The results from Tables 9-12 provide an overall picture of teachers who depart. Over half of the teachers who quit had master's degrees or higher, were relatively young, were more likely to be female than male, and departed from declining enrollment districts slightly more often than from increasing enrollment districts. In consequence, districts on the average should have had a slightly less educated teaching staff as a result of departures.

Table 12

Departures By Change In Enrollment

	Declining	Increasing	Total
Remain:	5,205	5,187	10,392
	41.25%	41.11%	82.36%
	50.09%	49.91%	
	81.39%	83.35%	
Depart:	1,190	1,036	2,226
	9.43%	8.21%	17.64%
	53.46%	46.54%	17.65%
	18.61%	16.25%	
Frequency	6,395	6,223	12,618
Percentage			
Row Percentage	50.68%	49.32%	100.00%
Column Percentage			

The net result of teacher mobility on the composition of the teaching staff is further revealed by examining the characteristics of new entrants into the district. Data on new entrants is contained in Tables 13-17. Our results showed that 63 percent of the teachers who were new to the district in 1977-78 had master's degrees or higher. The increase in educational attainment was primarily due to recent graduates who were entering the teaching profession for the first time. It appears that a higher proportion of new graduates were entering the declining enrollment districts to replace, at least partially, the greater number of teachers departing those districts. This is evidenced by the fact that approximately five percent more of the teachers in declining enrollment districts held master's degrees compared to those in increasing enrollment districts.

The age distribution of teachers also changed as a result of departures and entries of teachers. Of those teachers who departed, 61 percent were under 38 years old. Fifty-eight percent of the teachers who remained were under 38. Teachers who entered the district were much younger, with close to 66 percent under 38 years old. Forty-five percent of these were under 28, compared with 29 percent of those who left. With the influx of young graduates into the system, the average age of teachers falls in districts that hire new teachers. Again, since more teachers left declining enrollment districts to be replaced partially by younger teachers we found the age distribution more affected in those districts than in increasing enrollment districts. We also found that teachers who received above average salaries were less likely to quit than teachers who fell below the norm.

Table 13

Education By Age

	<28	29-38	38-50	50-60	60<	
B.A.	1,380	818	551	230	61	3,040
	11.04%	6.55%	4.41%	1.84%	.49%	24.33
	45.39%	26.91%	18.13%	7.57%	2.01%	
	49.10%	18.12%	16.61%	14.29%	25.10%	
B.A.+	408	978	680	371	61	2,498
	3.27%	7.83%	5.44%	2.97%	.49%	19.99%
	16.33%	39.15%	27.22%	14.85%	2.44%	
	14.51%	21.66%	20.49%	23.06%	25.10%	
M.A.	970	2,127	1,191	525	50	4,863
	7.76%	17.02%	9.53%	4.20%	.40%	38.92%
	19.95%	43.74%	24.49%	10.80%	1.03%	
	34.50%	47.11%	35.90%	32.63%	20.58%	
M.A.+	53	592	896	483	71	2,095
	.42%	4.74%	7.17%	3.87%	.57%	16.77%
	2.53%	28.26%	42.77%	23.05%	3.39%	
	1.89%	13.11%	27.00%	30.02%	29.22%	
Frequency	2,811	4,515	3,318	1,609	243	12,496
Percentage						
Row Percentage	22.50%	36.13%	26.55%	12.88%	19.45%	
Column Percentage						

Table 14

Teacher Entries in 1977-78 by Education

	B.A.	Masters+	
Teachers in 1975-77	5,538	6,958	12,49[illegible]
	36.05%	45.29%	81.34%
	44.32%	55.68%	
	84.13%	79.26%	
New Entries in 1977-78	1,045	1,821	2,866
	6.80%	11.85%	18.66%
	36.46%	63.54%	
	15.87%	20.74%	
Frequency	6,583	8,779	15,362
Percentage			
Row Percentage	42.85%	57.15%	100.00%
Column Percentage			

Table 15

Entries by Sex, Sample of Teachers in New York School Districts, 1977-78

	Male	Female	
Teachers in 1977-78 who are not new entries	4,514	5,670	10,184
	36.78%	46.20%	82.97%
	44.32%	55.68%	
	83.86%	82.28%	
New Entries in 1977-78	869	1,221	2,090
	7.08%	9.95%	17.03%
	41.58%	58.42%	
	16.14%	17.72%	
Frequency	5,383	6,891	12,274
Percentage	43.86%	56.14%	100.00%
Row Percentage			
Column Percentage			

Table 16

Teacher Entries in 1977-78 by Age

	<28	28-38	38-50	50-60	60<	
Teachers in 1976-77	2,826	4,560	3,339	1,632	261	12,618
	16.78%	27.07%	19.82%	9.69%	1.55%	74.90%
	22.40%	36.14%	26.46%	12.93%	2.07%	
	59.71%	84.10%	78.05%	78.46%	78.38%	
New Entries in 1977-78	1,907	862	939	448	72	4,228
	11.32%	5.12%	5.57%	2.66%	0.43%	25.10%
	45.10%	20.39%	22.21%	10.60%	1.70%	
	40.29%	15.90%	21.95%	21.54%	21.62%	
Frequency	4,733	5,422	4,278	2,080	333	
Percentage	28.10%	32.19%	25.39%	12.35%	1.98%	
Row Percentage						
Column Percentage						

Table 17

Entries by Change in Enrollment, Sample of Teachers in New York School Districts, 1976-77, 1977-78

	Declining	Increasing	
Teachers in 1977-78 Who are not new entries	5,205	5,187	10,392
	38.52%	38.39%	76.91%
	50.09%	49.91%	
	67.18%	89.99%	
New Entries in 1977-78	2,543	577	3,120
	18.82%	4.27%	23.09%
	81.51%	18.49%	
	32.82%	10.01	
Frequency	7,748	5,764	13,512
Percentage	57.34%	42.66%	100.00%
Row Percentage			
Column Percentage			

District characteristics affected the decision to quit in the directions we anticipated. Teachers in districts with higher-than-average dropout rates had a higher propensity to quit than teachers in other districts. On the other hand, teachers from districts with a higher percentage of parents who had attended college were less likely to quit than otherwise. Both these coefficients are statistically significant at reasonable levels of confidence, which indicates that the working conditions of the district are important to the teachers' decisions to quit.

To summarize, we were interested in the impact of collective bargaining on the quit behavior of teachers because departures affect the quality and cost of education. We found that the reduction in force based on seniority significantly influenced the decision to quit. The seniority clause reduced the propensity of more senior teachers to quit while it increased the propensity to quit of less experienced teachers. We also found that teachers who quit were younger, less experienced, slightly more educated, and more likely to be female than teachers who remained. On the other hand, the teachers hired to replace those who quit, although younger, were more highly educated than those who quit. Thus, districts with larger rates of turnover may be paying higher salaries but at the same time be building a higher quality staff, which could result in higher test scores.

Conclusion

This chapter has examined the effects of collective bargaining agreements on the budgets and educational processes of school districts in the states of New York and Michigan. We looked not only at the impact of the existence of agreements on resource allocation decisions, but also at the

the extensiveness of contract provisions and of the specific content of contract provisions on school budgets.

Chapter 4

WHERE DOES THIS LEAVE US?

Introduction

What have we learned from this examination of unions and public schools? If we cast away the paraphernalia of input-output analysis and educational production functions, are there lessons here for those who are concerned with education in public schools? All too often policy analysts and researchers develop their own mystiques, and administrators and politicians have a tendency to act as if they understood them. Status is frequently conferred these days on those seeming to be participants in the newest mysteries.

The purpose of this study has been to unveil some of the mysteries surrounding the role of unknowns in schools. In reviewing these findings a reader must have realistic expectations. If they are too high, the results will seem disappointly modest. However, if our results are compared with the existing knowledge of teachers and unions, then they make an important contribution to our knowledge of bargaining. We can say with confidence that collective bargaining changes decision-making in public education in ways that affect the educational process. The influence of collective bargaining on the rate of learning is now a little less "unknown" than it was when McDonnell and Pascal concluded that we knew very little about such effects.

The effects of collective bargaining on the educational process have remained a mystery for three principal reasons. The first two continue to shroud our results. First, education is an imprecise activity. Unlike

many technical processes in which the relationships between inputs and outputs are well known, what is involved in educating students still remains unclear. For learning to occur, there must be students able and willing to learn and teachers with sufficient knowledge and training in proximity to the students. Educational effectiveness studies cast some light on the relationships between student and community attributes, teacher characteristics, peer group relationships, instructional methodologies and student achievement. Yet, it is accurate to say that we do not know how to package these inputs to guarantee that learning will occur. A combination of inputs works with some students, while the same combination fails with others. Attempts to measure the impact of an event or occurrence, such as collective bargaining, on a process which itself is not well understood, necessarily produces uncertain results.

A second reason for our difficulty in isolating the effects of collective bargaining in public education is that collective bargaining is just one of many factors that shape the learning process. Education occurs in a context of established routines, educational traditions, federal, state and district laws and procedures, and immediate circumstances. Collective bargaining, at the most, would affect what goes on in schools in small ways. To date, social science has not been sufficiently developed and precise to measure small differences in the operation of social institutions. The problem is further complicated by the expectations of parties involved. Union proponents believe collective bargaining substantially improves public education. They are disappointed with evidence showing that much less is actually at stake. All of this is a way of saying that progress in understanding the role of unions in schools will be made only

if we recognize the limitations involved in making such an assessment and do not expect more than can possibly be delivered.

A third and important reason why the effect of collective bargaining on the educational process has been ignored is the lack of a convincing theoretical argument of why unions should make a difference. The critiques of collective bargaining are almost always made on legal or financial grounds, not on educational ones. Unions diminish democracy by reducing the discretion of democratically elected officials and their representatives. Unions have disproportionate power and therefore receive higher than optimal wages for their members or a disporportionately large allocation of public funds for public education. Neither of these frequently heard arguments is based on understanding of how collective bargaining affects the education of children.

Our first task in this study has been to present a theory of the role of unions in educational decision-making. It states that collective bargaining in public education will make a difference when the preferences of the average teacher and the preferences of the school administration differ on such matters as salaries, fringe benefits, working conditions, and educational policy. Prior to collective bargaining, policy in public schools was made unilaterally by school administrators, subject only to the requirement that the district attract and maintain a qualified staff of teachers. School district decision-making was responsive to new teachers and to those able and willing to leave the district when they were dissatisfied with the wage and working condition package offered by the district.

Collective bargaining has changed by legally giving teachers the right to voice their concerns about wages and working conditions. It has given teachers an alternative to expressing their preferences solely through the decision to stay or leave. Our theory states that resource allocation decisions that affect student achievement will be different to the extent that unions represent a different set of teacher preferences in collective bargaining than were previously considered by management.

The Results

We first examined the relationship between union affiliation and district characteristics. Our theory led us to hypothesize that decisions in unionized districts would reflect the preferences of inframarginal or older, more experienced teachers to a greater degree than in nonunionized districts. The data from New York and Michigan confirmed this expectation. Turnover was greater in nonunion districts than in unionized districts. Unionized districts retained more senior teachers by not hiring as many junior teachers, while nonunion districts released more experienced teachers and replaced them with less experienced and less costly teachers. This relationship is particularly pronounced in declining enrollment districts. Unionized districts maintained a larger percentage of teachers relative to the percentage decline in enrollment than did nonunionized districts. This resulted in larger spending per pupil, and a slightly higher percentage of the budget spent on instruction in declining enrollment districts (as compared to increasing enrollment districts).

When we examined the contracts of school districts, we found only slight differences related to union affiliation. In both states most districts were unionized. Although there were large variations among the contracts within each state, these variations were not explained by union affiliation. Differences between states were more prevalent. Contracts negotiated by NEA affiliates in Michigan seemed to place more emphasis on job security provisions while contracts negotiated by AFT affiliates in New York seemed to emphasize wage and working condition provisions. One explanation for this is that NEA units are more prevalent in Michigan where enrollments are declining more rapidly than in New York. The emphasis on job security by NEA units, therefore, may be more the result of declining enrollment than union philosophy. This latter interpretation is consistent with the notion that unions represent the preferences of inframarginal teachers in a district and teachers in declining enrollment districts are more concerned with keeping their jobs than maximizing their pay.

In Michigan unionization raises average salaries and teacher/student rations, but leads to lower salaries and higher teacher/student ratios in increasing enrollment districts. In New York NEA affiliates seem to do less well than AFT and nonaffiliated units in terms of salaries and teacher/student ratio. The differences are slight, however, and due to the high percentage of districts that are unionized, these differences should not be given much weight.

More interesting results were found when we examined the relationships between the content of contracts and resource allocation in districts. Contract provisions place constraints on the decisions of administrators. They

sometimes place limits on the way resources are employed. At other times they require a procedure which increases the cost of contract implementation. Administrators can avoid the impact or cost of the constraint by substituting one resource for another. If teachers cannot be laid off, for example, administrators can reduce instructional expenditures by laying off aides. The larger the number of provisions in a contract, the less able are administrators to avoid the impact of the contract provision by substituting another resource.

Our analysis proceeded then in two ways. First, we looked in New York at the effect of the number of contract items on the allocation of a district's budget. The number of contract items is a good proxy for the maturity of the bargaining relationship and the power of the union. As expected, we found that as the number of contract items increased, budget allocations for instructional expenditures, teacher salaries, and teacher benefits increased and the allocations for administration and "other" expenditures decreased. For example, teachers in districts with the maximum number of contract items received average salaries that were $1,855 higher than those of teachers in districts with the minimum number of contract items. Again, these findings were consistent with the notion that collective bargaining constrains the decisions of administrators and also allows teachers to exercise a voice in how resources are to be allocated.

We also found that strong unions, as reflected by the number of contract items negotiated, used their power to increase per pupil spending. Districts with the maximum number of contract items spent $72 more per pupil than did districts with the minimum number of contract items.

The second procedure was to examine the relationship between specific contract items and the allocation of a district's budget. In New York the presence of arbitration and grievance items appeared to come at the expense of salary and working condition benefits. Items related to job security, such as staff-reduction provisions and recall provisions, increased funds allocated to instructional expenditures and teacher salaries. The presence of a recall procedure also led to higher instructional expenditures at the expense of "other" expenditures. District contracts with a provision for dismissing teachers for other than financial reasons allocated more money to administration, presumably because of the higher administrative costs of administering such a procedure.

Finally, the New York analysis revealed that the presence of employee benefit provisions in contracts is related to higher expenditures. Since these benefits are a form of compensation, they are partly offset by a reduction in teachers' take-home pay. On average, teachers in districts that provide life insurance receive $708 less in salary, while teachers in districts that provide health insurance take home salaries that are $1,143 lower than those of teachers in districts without these provisions.

In Michigan, the presence of contract items produced a somewhat different pattern of results. For example, New York districts that had a reduction-in-force provision lowered average salaries but maintained a larger staff per pupil ratio than districts without the provision. As mentioned previously, one explanation for this result was the higher rate of enrollment decline in Michigan than in New York. The presence of the reduction-in-force provision based on seniority produced an unexpected

result in Michigan. While it protected the total teaching staff from layoffs, it did not protect the most senior members. Rather, declining enrollment districts with a reduction-in-force provision based on seniority were able to replace senior faculty with less experienced faculty more readily than those without the provision. Another provision eliciting different responses in the two states was the teacher preparation provision. In New York, it was not related to variations in resource allocation. In Michigan, teachers in districts with the provision received lower salaries than those without it.

Contrary to conventional wisdom, we found that collective bargaining provisions do make a difference in the way districts allocate their resources among important budget categories. In Michigan, unions were able to negotiate provisions that provided benefits to teachers, but usually only by making concessions on other items. To gain job security by a reduction-in-force procedure required that teachers accept a lower salary. In New York, union negotiators seemed better able to provide benefits for their members without compromising other benefits. This general difference, again, may have resulted from a more favorable enrollment and financial environment in New York than in Michigan, or from differences in the legal environment in which negotiations were carried out in the two states.

In New York, we were able to investigate the impact of collective bargaining on the propensity of teachers to quit. Our model led us to expect that collective bargaining would provide an alternative to quitting, the option of voicing dissatisfaction and negotiating provisions to respond to teachers' concerns. Reducing teacher turnover is important because it is

costly to recruit and retrain teachers. The analysis revealed that the presence of a reduction-in-force clause based on seniority reduced the quit rate of more experienced teachers but increased the propensity to quit of less experienced teachers. It also showed that teachers hired to replace those who leave are younger and more highly educated than their predecessors. In other words, districts with larger turnover, either as a result of declining enrollment or the union's failure to protect its members, may be building a more qualified teaching staff, which could result in greater student achievement.

Conclusion

In Chapter 2 we noted that collective bargaining gives teachers a voice in decision-making at the district level. The effects of "voice" are reflected in the provisions contained in contracts that act to constrain the decisions of management. Voice may also improve the performance of schools by giving teachers a greater stake in the negotiated decisions of the district and, indirectly, by making them feel more involved in the decision-making process. Our study showed that collective bargaining usually changed the allocation of district resources in ways that are perceived to be beneficial to teachers. Collective bargaining also reduced teacher turnover and seemed to encourage the entry or more qualified teachers when replacements were required.

The evidence presented here on the role of unions in public schools is limited by both the available data and the method of analysis. The analysis is well suited to explain the impact of collective bargaining on

the allocation of resources, and indeed the results are very insightful. The link between inputs and student outcomes, however, is less satisfactory. Even though our approach reflects the state of the art in education production functions, the present technology does not reveal the subtle differences in individual teacher and student behavior required in a study such as ours.

Many of the linkages explored in this study need to be examined at the classroom or even the individual student level. Many of the problems of relating behaviors at the district level, such as the negotiation of collective bargaining contract and the transfer of knowledge in the classroom to individual students, have not been adequately solved here. Much larger data sets collected at the student level over a protracted period may be necessary to fully answer the questions we have only begun to explore. We do feel that our study has taken a necessary and substantial step in beginning to understand the relationships between unions and public education.

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